UNIVERSITY NEWS, APRIL 1, 1980. Regd. No. R.N. 7180/62 Postal Regd. No. D(C)-534

Scale of Pay:
Rs. 1200-50-1600-60-1900/- plus D.A. as admissible.

Age: *Preferably between 30 and 40 years.*

Qualifications

Essential: (i) First Class Master's Degree in Agricultural Engineering. (ii) 5 years' experience in Crop Process Engg. both in teaching and research.

***Desirable*:**
(i) Doctorate in Agricultural Engg.
(ii) Knowledge in modern methods of transfer of technology.

(b) **Post:** EXTENSION OFFICER—1 post

Scale of Pay
Rs. 700-40-1100-50-1600/- plus D.A. as admissible.

Age: Preferably below 30 years.

Qualifications:

Essential: (i) First Class Master's degree in Agri. Engg. (ii) 2 years experience in Crop Process Engg. both in teaching and research.

Desirable:
Knowledge in modern methods of investigation and extension.

VII. RADAR AND COMMUNICATION CENTRE

(i) **Scheme:** "Microwave Antennas including Phased Arrays"

Duration: 2 years.

(a) **Post:** PRINCIPAL SCIENTIFIC OFFICER—2 posts

Scale of Pay:
Rs. 1500- 60- 1800- 100- 2000 /- plus D.A. as admissible.

Age: Preferably below 50 years.

Qualifications:

Essential: (i) A good academic record with a Master's degree in Electronics and Communication Engineering or its equivalent; (ii) 10 years' experience in the field of Antennas, Phased Arrays, Electromagnetics, of which at least 5 years in the research and development work; and (iii) Published research work of good quality in journals of repute.

Desirable:
(i) Doctorate degree (ii) Good design and/or industrial experience.

(b) **Post:** SENIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay:
Rs. 1100-50-1600/- plus D.A. as *admissible.*

Age: Preferably between 30 and 45 years.

Qualifications:

Essential: M. Tech. degree with first class at the Bachelor's degree level in Electronics and Communication Engineering or *equivalent* with 5 years' experience in research and development work.

Desirable:
Experience in carrying out research, corporate membership of a recognised Institution. Specialisation in any one of the following :—
(1) Microwave Antennas,
(2) Phased Array Antennas,
(3) Electromagnetics.

(c) **Post:** JUNIOR SCIENTIFIC OFFICER—1 post

Scale of Pay:
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Not exceeding 35 years.

Qualifications:

Essential: (i) First class Bachelor's *degree in Electronics and Communication* Engineering or equivalent. (ii) At least two years' experience in research/development work.

Desirable:
M. Tech. degree in Electronics and Communication Engineering.

***Specialisation*:**
Knowledge in any one of the following :—
(1) Microwave Antennas,
(2) Phased Arrays,
(3) Electromagnetics.

(ii) **Scheme:** "Studies on Electromagnetic Scattering and Target Identification."

Post: SENIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay:
Rs. 1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Duration: 2 years.

Qualifications and Specialisation:

Essential: M. Tech. degree with first class at the Bachelor's degree level in Electronics and Communication Engineering or equivalent with 5 years' experience in research and development work.

Desirable

Experience in carrying out research, corporate membership of a recognised Institution. Specialisation in any one of the following—
(1) Microwave Antennas.
(2) Phased Array Antennas.
(3) Electromagnetics.

*(ii) **Scheme*** *"Feasibility* Study of Phased Array Radar Systems including applications for Missile Tracking and Precision Approach Radar."

Post: JUNIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Not exceeding 35 years.

Duration: 2 years.

***Qualifications*:**

Essential: (i) First Class Bachelor's degree in Electronics and Communication Engineering or equivalent. (ii) At least two years' experience in research/development work.

Desirable:
M. Tech. degree in Electronics and Communication Engineering.

Specialisation:
Knowledge in any one of the following:—
(1) Microwave Antennas,
(2) Phased Arrays,
(3) Electromagnetics.

(iv) **Scheme:** "Detection of Geological Discontinuities and Weak Zone in Coal Mines using Radar Techniques"

Duration: 2 years.

(a) **Post:** SENIOR SCIENTIFIC OFFICER—1 post

Scale of Pay:
Rs. 1100-50-1600/- plus D.A. as admissible.

Age: *Preferably between 30 and 45 years.*

Qualifications:

Essential: M. Tech. degree with first class at the Bachelor's degree level in Electronics and Communication Engineering or equivalent with 5 years' experience in research and development work.

Desirable:
Experience in carrying out research, corporate membership of a recognised institution.

Specialisation in any one of the following:—
(1) Microwave Antennas.
(2) Phased Array Antennas.
(3) Electromagnetics.

(b) **Post:** SCIENTIFIC OFFICER—1 post

Scale of Pay:
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Not exceeding 35 years.

Qualifications:

Essential: (i) First Class Bachelor's degree in Electronics and Communication Engineering or equivalent. (ii) At least two years' experience in research/development work.

Desirable:
M. Tech. degree in Electronics and Communication Engineering.

Specialisation:
Knowledge in any one of the following:—
(1) Microwave Antennas.
(2) Phased Arrays.
(3) Electromagnetics.

Application forms may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm x 10 cm. Applications accompanied with an application fee (non-refundable) of Rs. 7.50 (Re. 1.87 for SC/ST candidates) payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur, at Kharagpur-2 Post Office should reach the Registrar, IIT, Kharagpur by the **30th April, 1980.**

Applicants who are in the employment of Government / Semi-Government organisations or any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

PUNJABI UNIVERSITY

PATIALA

Notice

Reference our advertisement No. 9/Est/EPS/PRG/80 Published in March 15, 1980 issue, the last date for the receipt of applications both for advance and through proper channel for the post of Professor of Economics has been extended upto April 15, 1980.
No.12/Est/SPS/PRO/80.

REGISTRAR

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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH APRIL 15, 1980

Special convocation held at Jiwaji University to confer the degree of D.Lit. (honoris causa) to Prof. S. S. Bhandarkar, its former Vice-Chancellor and others.

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMN. OFFICE: RAJENDRA—NAGAR:
HYDERABAD—30

Advertisement No. 3/80, dated: 29.3.1980

Applications are invited in the prescribed form alongwith the Registration fee of Rs. 5/- for the following vacancies *in the Andhra Pradesh Agricultural* University so as to reach the Registrar on or before 30-4-1980.

Sl. No.	Name of the post	No. of vacancies
1.	Agronomists	5
2.	Soil Scientists/Agricultural Chemists	4
3.	*Soil Physicists*	3
4.	Entomologists	4
5.	Plant Physiologist	1
6.	Horticulturist (Agronomy)	1
7.	Plant Pathologists	2
8.	*Agricultural Economist*	1

Qualifications for all the above posts

(a) Essential

(i) Ph.D., Degree or other equivalent degree in the subject concerned or other published work *of an equally high standard.*

(ii) 5 years experience of teaching *and/or research and/or* extension in the concerned subject.

(b) Desirable

Other things being equal a basic Professional degree in *the Faculty* concerned is preferred.

Scale of pay for all the above posts Rs. 1200-50-1300-60-1900.

All *the posts are temporary* but likely to continue.

(i) Applicants should appear for interview before the Selection Committee at their own cost, if so required.

(ii) Selected candidates are liable to be transferred to any equivalent *posts in teaching, research* and extension under the University.

(iii) *The persons selected will be on* probation for a period of 2 years within a continuous period of 3 years.

(iv) It is open to the University to fill or not to fill the posts advertised.

(v) Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendra*nagar, Hyderabad-30, on payment* of Rs. 2/- in person or through postal order uncrossed.

T. Narayan Reddy
REGISTRAR

Indian school of Mines

DHANBAD-826004

No: 615135/79 **Dated: March 21, 1980**

Admission to Postgraduate Earth Science Programmes 1980-81

1. Applications are invited from candidates possessing requisite qualifications as indicated below for admission to the following post graduate EARTH SCIENCE *programmes being (or* likely to be) offered at Indian School of Mines, which is deemed to be a University under the UGC Act:

No.	Programme	Eligibility Qualifications	Department
ES-I	One-year M Tech *(Mineral Exploration)*	M Sc in App Geology	Applied Geology
ES-II	One-year M Tech (Engg Geology)	M Sc in App Geology OR Degree (or equiv) in Civil Engg.	-do-
ES-III	One-year M Tech (Mining Geophysics)	M Sc in Geophysics/ App Geophysics	Applied Geophysics
ES-IV	One-year M Tech* (Petroleum Exploration)	-do-	-do-

*This is a new programme likely to be offered from the 1980-81 Session.

2.1 In each case a candidate should have obtained at least 60% marks in the qualifying examination-relaxable to 55% for SC/ST candidates, for sponsored candidates and for those with field/research experience or special aptitude for research.

2.2 Candidates shall have to appear at a written test (of about two-hour duration) and **viva voce** at the SCHOOL on the dates intimated. No T.A. shall be paid for attending these tests.

2.3 Only 16 candidates shall be admitted to each course. 20% *of the seats are reserved for SC/ST candidates, if available; Other*wise they will be thrown open.

3.1 Preference is given to **sponsored candidates**, (Sponsorship in this context means retention of lien on post and grant of suitable allowance). Application of sponsored candidates should carry suitable endorsement to this effect by the employer.

3.2 **Scholarships**: Unsponsored students are eligible for a Scholar*ship of Rs 400 p m. for a period not exceeding 12 months provided* that they have obtained at least 60% or 55% marks, as the case may be, in the qualifying examination.

4.1 **Procedure for applying**: Application forms along with programme particulars can be obtained by sending a Bank Draft or crossed Postal Order (where banking facilities are not available) for a sum of Rupees Five only, made payable to the Registrar, Indian School of Mines, Dhanbad-826004, alongwith a self-addressed unstamped envelope of size 23 cm × 10 cm.

4.2 **Last Date for Receipt of Completed Application is May 20, 1980.**

S.P. Varma
REGISTRAR

O/ISM/80

UNIVERSITY NEWS

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Editor : ANJNI KUMAR

Syndicate Studies— A Teaching-Learning Technique in Higher Education

Br. Elias Maria & Dr. (Mrs.) Rajani Shirur

What is a Syndicate ?

The term syndicate implies "Combination of Commercial firms associated to forward a common interest". Originally used widely in the industrial sector, the term has gained importance in recent years in the educational field. A syndicate is a self-selected small group of learners (about five or six) who carry out assignments based on reading, discussion and writing.

As a method of learning, it is particularly suited to adults for it provides adequate freedom to the learners in the choice of materials, level of participation, and in the whole process of learning. Syndicate studies are essentially nonformal by transcending the class situation and holding group discussions, supplemented by available resources resulting in a substantial and erudite report on a particular subject or problem.

Scope and Functions

Structuring the learning situation is vitally important and the learning is highly effective when the learners are entrusted with the responsibility for organizing their own learning. Syndicate method provides opportunity to the learners for taking up the responsibility for structuring the learning situation and the related components.

The syndicate method provides an atmosphere of freedom to learn and free the learners from dependency leading to a critical insight into problems and subjects. This method attempts to provide conditions that enable the learners to develop their initiative, objectivity and judgement.

Objectives

In any productive work group, what is expected is to share the experiences by the learners and become conscious of the state of interdependence in addition to gaining knowledge on the subject matter. Another important objective of the syndicate method is that of improving the skill of critical judgement by providing opportunities to the learners for considering their own beliefs and values in relation to their learning. It also provides a setting in which matured academic relationships with the fellow-learners and the instructor are developed.

Main features of the Syndicate Method

The primary features of the syndicate method include the following : A group of say 25-30 learners are divided into four or five syndicates each consisting of five or six learners.

A major theme, is selected and divided into several critical aspects, and a series of questions or problems are identified and each of the syndicate is assigned with a particular aspect. A detailed reading list and other stimulus materials are prepared and provided to these syndicate groups. Members of each syndicate distribute the tasks among themselves and discuss views and ideas and give a report, or speak about one of the particular aspects of the subject. This method calls for tact and initial preparation and guidance on the part of the leader —teacher. This method is highly motivating and produces lively discussions. The size of the group, being small, encourages participation and removes fears and inhibitions of the participants.

Basic Principles of Syndicate Method :

The Syndicate group should formulate clear-cut objectives. A clearly differentiated role structure understood by all the members must follow. There should be shared norms and values with regard to procedures to be adopted for the syndicate. Under this method, each individual is recognised as having different skills and responsibilities to offer to the syndicate. The syndicate must enjoy free flow of communication of relevant information. The group activity ensures effective learning and assimilation, and develop qualities of leadership and initiative.

The group work together with or without a guide and cooperation in making a decision and or preparing a report. Greater emphasis is given on interaction between members which decreases dependence on the guide or instructor.

The report of the syndicates are presented to the whole group in a plenary session. On the basis of these group reports, the instructor synthesises, challenges or offers supplementary conceptual framework.

Syndicate method demands hardwork and provides a vivid shared experiences. But the participants feel less pressure because of their active involvement. This method is more conducive to independent thinking.

Role of the Instructor :

The functions of the instructor who uses syndicate method is much more demanding than that of a conventional teacher. There are three critical areas of responsibility. First he/she has to clarify his/her course objectives, design it and select the appropriate readings. Second, he/she has to act as a guide and advise all the members by suggesting other resource materials as well as become aware of the social processes or dynamics that might impede the work of the syndicate group. Third he/she has also the responsibility of assessing the work of the syndicates.

PLENARY

Session I

(a) Groups are formed
(b) Topic is chosen and important aspects are identified
(c) Each syndicate is assigned a subject.

GROUP MEETING

Session II

(a) Each group has its own session in a separate place
(b) The group elects a leader, a rapporteur, and an observer. The observer could be changed for each group meetings
(c) A detailed break-up of the aspect taken up is made and an outline for discussion sessions is drawn up
(d) Each member of the group is assigned a sub-topic for intensive study and/or for writing a paper
(c) The discussion outlined by each of the syndicate is prepared and circulated among all the groups.

GROUP MEETING

Session III

Each group meets separately and discusses the plans and materials of other groups.

PLENARY SESSION

Session IV

(a) Each group gives its comments on the plans drawn up by other groups
(b) Revised plans are suggested.

GROUP MEETING

Session V

A group meeting is organised in which fresh materials, reference etc. are distributed and opinions shared on the topics allotted.

INDIVIDUAL WORK

Session VI

Individual members of each group study, make notes, read and plan and prepare fresh materials on the topics assigned.

Session VII

As many group meetings as are needed are organised for sharing of ideas and experiences. The ideas are synthesized, and papers are consolidated. Reports of each of the groups are prepared and distributed.

GROUP MEETING

Session VIII

Group meets separately to discuss the reports of other groups.

FINAL PLENARY SESSION

Session IX

(a) Group reports are read out and commented upon by all
(b) Final consolidated report is compiled.

Higher Education and Syndicate method :

The Syndicate method is a highly suitable method of teaching in higher education. It is particulary useful in developing skills for self learning among students in the colleges and Universities.

Education aims at creating critical awareness of any problem that demands active involvement which leads to action. Formulation of any action program calls for analysis of the problem in all its dimensions. This is best done through syndicate method. Not only individuals learn effectively in small groups, but they learn together through an analysis of a particular theme in its totality. Each individual is encouraged in the group to actively participate and contribute ideas and with the assistance, from other members and with the help of references, they change their attitude and gain the right understanding of the problem in its proper perspective. ☐

How Continuous is Continuous Internal Assessment ?

K. R. Ramachandran Nair*

The concept of continuous Internal Assessment as a tool for academic evaluation has undergone various changes since it was first introduced in Bihar in 1954. To-day almost all Universities have adopted it and some which follow semester pattern have made it an integral part of the overall evaluation and assessment technique. Teaching, learning and evaluation are the three components of the same process of education. Since learning/teaching is a continuous process, it is obvious that assessment also should be continuous. Continuous Internal Assessment is the process by which student attainment is evaluated at regular intervals during a specified course duration. Thus it is the updating of teachers' judgement about their own pupils at regular intervals enabling cumulative judgement to be made at the end of the course.

Continuous Internal Assessment, if scientifically organised, serves the purposes of feedback to learning activity. Tests and evaluation at regular intervals provide either a positive or negative feed back to the pupils. Thus they help the pupils to accelerate the learning activity or to terminate/modify it. Continuous Internal Assessment provides extended awareness to both the pupil and the teacher about the State of their performance in relation to the accepted educational objectives and goals. So learning/teaching activity becomes purposeful, goal-oriented and motivated. At every evaluating occasion the student handles only a limited quantum of materials. So a wide-spectrum feedback on areas of completed learning becomes possible.

Continuous Internal Assessment should not be viewed merely in terms of subjects or courses a student has to learn. Other aspects of the student's growth and development like his sense of judgement sensitivity, intelligence, capacity to think and work style of social functioning etc. are also to be taken into account. However, in actual practice, continuous Internal Assessment has degenerated into an insipid and mechanical procedure of conducting a few unprovocative tests and assignments during a semester instead of the traditional examination at the end of the academic year. The most widespread practice is to assess the student attainment through occasional tests and assignments either to be done in the class or at home. In both cases answers are either cooked up by the simple recourse to copying from bazaar notes or manipulated through unauthorised external assistance.

There are at least six factors that militate against a meaningful working of the continuous Internal Assessment system in our colleges :-

(1) Absence of a specific statement of educational objectives and goals in advance.

(2) Overcrowding in classes and the lack of facilities in almost all colleges to organise tests and assignments free of malpractices.

(3) Repeated interruptions to the process of teaching and learning in the campuses due to student agitations and general indiscipline rendering regular and continuous assessment impossible. Thus continuous assessment ceases to be continuous.

(4) Unseemly competition among colleges and even various departments in the same College to award inflated marks to their students either to exaggerate their doubtful academic achievements or to play safe with students.

(5) Lack of Teacher involvement and teacher training leading to apathy and reluctance to carry out experimentation.

(6) Pressures brought on the teachers by militantly organised student groups, politicians, parents and college managements to obtain inflated grades for undeserving students.

A charge against the continuous Internal Assessment system was that it would be used by teachers to tyrannise and harass students. However, to-day the situation is just the reverse. How it is the students who pressurise and even threaten the teachers by their perpetually organised militant postures to secure higher grades.

Continuous Internal Assessment is a scientific tool of evaluation if properly carried out. Like any other scientific system, this also might lead to disastrous consequences if misapplied. We have already begun experiencing the aberrations of the system. It is high time that the Universities and Colleges thought of some remedial measures or scrap the whole system and revert to the old pattern of external examinations conducted by the University. The theory that those who teach should also evaluate has lost much of its validity to-day because those who are expected to teach do not always teach and those who are expected to evaluate without fear or favour are forced to evaluate under constraints. Moreover, if continuous Internal Assessment is reduced to the testing of students knowledge of the subject alone as it is today, even external examinations would serve the purpose.

(Continued on page 201)

**Professor of English, Tagore Arts College, Pondicherry.*

Expenditure Analysis in College Management

C. B. Padmanabhan*

The object of this paper is to indicate the role that analysis of expenditure incurred by a college can play in college management. It is argued that a careful analysis of the expenditure of the college will ensure greater efficiency in the functioning of the college particularly with regard to the use of limited resources. In this paper, attention is limited only to the following three aspects of expenditure analysis :

(a) Classification of expenditure of the colleges ;
(b) Analysis of expenditure by percentage on instruction, administration, purchase of equipment etc. ; and
(c) Cost per student or unit cost.

One can identify several other kinds of financial analysis of the college expenditure but we limit our attention in this paper only to the above three. For this purpose we are also making use of the figures that are published by the Ministry of Education, Government of India, collected by them every year.

Classification of expenditure of the colleges

How are the expenditures of the colleges at present *classified and accounted for ? Is there* a uniform system of classification and accounting ? Till recently even universities in India have not been *accounting their expenditures in* a uniform way. Every university followed its own method of classification. After the UGC has laid down a model form of the budget universities in India have started classifying their expenditure and incomes in a standard way.

*It is necessary to have accurate and strict classifi*cation of expenditures of the colleges for the following reasons :

(i) Colleges receive funds from different sources like State Govts. UGC, and private endowments. Expenditure out of these funds is to be *done in accordance with certain restrictions.*
(ii) The accounts must be accurately classified in accordance with the departmental organisation.
(iii) There should be comparability or data of different institutions and same institution.

In financial administration, attention must be *paid to the classification system used in the accounting* system. Theoretically we can identify the following five bases of classification of the expenditure:

(i) *Effect of transaction on the assets of the institu*tion. Accordingly the transactions may be a current one in the sense that it does not effect *the asset of the college at all. It may* be capital in the sense that it effects the asset of the college i.e. it may be an addition to capital. It may be a repayment of the debt.
(ii) Objects of expenditure. In this method of accounting, expenditure is accounted for on the basis of objects on which they are incurred: For example salaries, purchase of equipment and buildings etc. In fact at present our colleges account for the expenditure under these heads.
(iii) Functions performed. Expenditure can be accounted for on the basis of the functions on which the expenditure has been incurred ; functions the college has to perform various functions in order to achieve the objectives for which it is operating. For example, we can identify the *following as the three major functional divisions* for all expenditures :
    (a) Educational expenditure ;
    (b) Non-educational expenditure for services that do not directly contribute to the educational programme, and
    (c) Auxilary activities such as resident halls, dining rooms and other enterprises that are generally expected to be self-supporting. Under the major heads of educational expenditure the following six functions are recognised :
    I. General Administration and General Expenses
    II. Instruction
    III. Research
    IV. Plant Operation and Maintenance
    V. Extension activities
    VI. Museum and Library
    Under non-educational expenditure are included :
        I. Interest on debts
        II. Scholarships and other student aids
        III. Admission of students
(iv) The fourth method of classification of the expenditure that can be followed is on the basis of organisational unit which is performing the function i.e. there are various divisions of the college and each division's expenditure is accounted for under that account.
(v) Last basis of accounting is on the basis of the funds that the college have. It may be that in a certain colleges, there are different kinds of funds like student funds, endowment funds etc. and expenditure may be classified on the basis of these funds.

In the light of the above methods of classification of expenditure, we may enquire how the colleges in India are classifying their expenditure. The Ministry of Education collects every year information from all colleges in India in a prescribed form and expenditure is classified as the following :

(a) Salaries and allowances of teaching, academic staff.

**Fellow, NIEPA.*

(b) Salaries and allowances of non-teaching staff.
(c) Maintenance of buildings.
(d) Maintenance of equipment and furniture.
(e) Consumption of chemicals and other tools.
(f) Laboratories.
(g) Stipends, scholarships and other concessions.
(h) Games and sports.
(i) Hostel ; and
(j) Other items.
Total recurring expenditure.
(a) Libraries.
(b) Buildings.
(c) Equipments.
(d) Furnitures, and
(e) Other items.
Non-recurring expenditure.

On the basis of the above classification adopted by the Ministry of Education, we have given the total recurrent expenditure incurred by all colleges in general education (post-graduate, degree and under-graduate standard). Table No. 1 gives the total direct expenditure by objects. We may notice that a major portion of the direct expenditure is incurred on salaries of teachers and other staff. For example, for India as a whole 67.6% of the total direct expenditure is spent on salaries of teaching staff; 17.1% is spent on salaries of other staff. Thus 84.7% of the total direct expenditure is spent on salaries in colleges of general education. Only 4.5% is spent on equipment and other appliances and 13.5% is spent on other items. We may notice the small percentage of expenditure incurred on equipment and other appliances which will be useful for the purpose of teaching in colleges. For Andhra Pradesh State 64 4% of the total direct expenditure is spent on salaries of teaching staff; 16.4% is spent on salaries of other staff. Only 4.7% is spent on equipment and other appliances and 14.4% is spent on other items. We have given in Table No. 2 the percentage of expenditure incurred on salaries and other expenses by different colleges in Delhi (This information is taken from a study made by Dr Ruddar Dutt of Delhi University).

It may be noticed that we are not in a position to analyse the percentage of expenditure on different functions because there is no functional classification of expenditure incurred in colleges. If the expenditures of an institution have been accurately classified according to the functions, the determination of the percentage devoted to each of the functions throws considerable light on institutional policies. Comparison of the percentage distribution for several years will reveal the shifts that have occurred in emphasis on the various phases of the institutional programmes. We, therefore, conclude this section by suggesting that there should be a functional classification of expenditure.

Technique of unit cost analysis

Another method of analysing expenditure data is to relate the amount of expenditure to some quantitative expression of the size of the task to be performed. The essential purpose served by this unit cost technique is to translate figures for expenditure into terms that are comparable between or among institutions or departments within the institution or among the different functions or over a period of time. Unit cost techniques are widely used in industries for controlling prices and to evaluate efficiency of management and operation. The use of such unit costs in industries has led to extensive refinement in accounting techniques. The cost per student on instruction for example is the total cost of instruction divided by the number of students enrolled and receiving instruction. The total cost per student is the total expenditure of the college divided by the number of students.

Recurrent unit cost and capital cost per student

We have to distinguish between per student recurrent cost and per student capital cost. Per student recurrent cost indicates the cost of operating a seat. Per student non-recurrent cost indicates the cost of creating a seat. This is capital cost which will include cost of buildings, equipments, furnitures, play grounds facilities etc. The total capital cost divided by the number of students enrolled will give the capital cost per student. Per student recurrent cost indicates the cost of operating a seat after it has been created

Factors affecting unit cost

Several factors affect cost per student. Some of them are :

(i) Age of the college—the older is a college the more stabilised it would have become in enrolment and, therefore, enrolment would have become large and cost per student is likely to be low. On the other hand, the older the college the larger will be the teacher salaries because of increments for teachers and the higher is likely to be the per student cost.

(ii) The size of enrolment. The larger number of students enrolled the lower is likely to be per student cost. That is why it is always suggested that the size of a college should be an optimum one in order that the per student cost is an optimum one. Table No. 3 brings the position relating to the size of the colleges in Delhi. We may notice that most of them are of not viable size and that is why it is suggested that there should be planning for the location of colleges.

(iii) The average pay of the teacher. Since the salaries of teachers constitute the major item of expenditure in colleges the higher the pay scale and the pay of a teacher the higher is likely to be per student cost.

(iv) The ratio of non-teacher cost to total cost. The higher the ratio of non-teacher cost to total cost the higher will be the per student cost.

We have given in table No. 3 the per student cost for some colleges in Delhi. We suggest that every effort be made in order to calculate the cost per student and use it for planning future activities in the college.

Table No. 1

Percentage of Total Direct Expenditure on Education by Objects and Per Student Cost (Colleges for General Education (P. G., Degree and Undergraduate) Standard)

State	Salaries of Teaching Staff	Salaries of Other Staff	Equipment & Appliances	Other items	Total Cost	Per Student Cost
	%	%		%	Rs.	Rs.
1. ANDHRA PRADESH	64.4	16.4	4.7	14.4	205887291	537
2. TAMIL NADU	70.2	13.7	6	10	135588369	697.8
INDIA	67.6	17.1	4.5	13.5	1756385481	572.5

Table No. 2

Break-up of Expenditure of Institutions (1976-77)

In Rupees at current prices

Institutions	Salaries		Total salaries	Other expenses	Total expenditure
	Teaching staff	Non-teaching staff			
	%age	%age	%age	%age	%age & Rs.
Morning Colleges					
1. Miranda	74.9	17.5	92.4	7.6	100.0 33,05,264
2. Deshbandhu	68.7	18.4	87.1	12.9	100.0 29,70,310
3. Laxmibai	78.1	13.1	91.2	8.8	100.0 22,93,739
4. Rajdhani	74.1	16.6	90.7	9.3	100.0 24,02,058
5. Satyavati	71.8	17.4	89.2	10.8	100.0 12,71,505
6. Shyamlal	69.4	20.7	90.1	9.9	100.0 19,14,395
7. Hindu	72.8	11.6	84.4	15.6	100.0 24,20,326
8. G.D. Salwan	67.2	21.5	88.7	11.3	100.0 11,51,396
9. S.R. College of Commerce	73.1	14.1	87.2	12.8	100.0 20,78.925
10. St. Stephen	61.3	23.3	84.6	15.4	100.0 20.41.878
TOTAL	71.5	17.2	88.7	11.3	100.0 218,49,796
Evening Colleges					
1. Ramlal Anand	63.0	24.9	87.9	12.1	100.0 5,60,151
2. Shyamlal	66.6	19.4	86.0	14.0	100.0 8,48,191
3. Satyavati	66.6	21.4	88.0	12.0	100.0 6.36,714
School of Correspondence Courses	31.6	33.4	65.0	35.0	100.0 44.05,437
Non-Collegiate (Women) delegacy	65.4	17.6	83.0	16.9	100.0 10,01,090

Table No. 3

An Analysis of Expenditure per Student in Delhi University (1976-77)

Name of the College	Total Expenditure	No. of Students	Expend. per Student Enrolled
1	2	3	4
			Rs.
Regular College			
(a) Morning Colleges			
1. Miranda	33,05,264	2,247	1471.0
2. Deshbandhu	29,70,310	1,567	1895.9
3. Laxmibai	22,93,739	1,680	1365.3
4. Rajdhani	24.02,058	1,409	1704.8
5. Satyavati	12,71,505	1,036	1227.3
6. Shyamlal	19,14,395	1,475	1297.8
7. Hindu	24,20,326	1,749	1383.8
8. G. D. Salwan	11,51,396	899	1280.8
9. S. R. College of Commerce	20,78.925	1,350	1539.9
10. St. Stephen	20,41,878	1,032	1978.5
TOTAL	218,49,796	14,444	1512.7
Evening Colleges			
1. Ramlal Anand	5,60,151	806	694.9
2. Shyamlal	8,48,191	752	1127.9
3. Satyavati	6,36,714	642	991.8
TOTAL	20,45,056	2,200	929.6
Non-Collegiate	10,01,090	8,894	112.6
School of Correspondence Courses	44,06,437	13,474	326.9

(*Continued from page 197*)

If there is a will, the continuous Internal Assessment system can be improved on the following lines and its validity, reliability and respectability can be ensured to a great extent.

(1) Marks obtained in the internal assessment and external examination conducted by the University may be shown separately in the certificate instead of adding them up as is being done today.

(2) Better still, the very practice of sending continuous internal assessment marks to the University can be given up. Instead, the colleges would use the internal assessment results to recommend students for University examinations. Thus continuous internal assessment can be used as basis for a compulsory screening of students at the college level.

(3) Yet another device to avoid discrepancies caused by standard variations and irrational distribution of marks in the continuous internal assessment, is to introduce scaling of marks. The method of scaling recommended by Dr. Edwin Harper appears to be most suitable where evaluation is done in terms of marks instead of grades. In this method the marks obtained by the student at the external examination conducted by the University are taken as the standard. The marks awarded by the teacher in continuous internal assessment are not reported to the University. Instead, each teacher would list his students subjectwise in their rank order of merit and only this rank order would be communicated to the University. At the University level the external marks obtained by students in each subject are arranged in their rank order. Scaling is done on the basis of the rank order of students in the continuous Internal assessment and rank order of marks in the external examination. After having prepared the two lists the first ranking student in the continuous internal assessment list is awarded the first ranking marks in the external examination list as his internal marks. The combination of this with his external examination marks would be his final marks. The student who is placed in the first rank in the internal assessment list may not necessarily receive the highest marks in the external examination list and vice versa. This method of scaling would minimise, if not altogether abolish, the several serious drawbacks inherent in the manner continuous internal assessment marks are awarded at present. □

Physics and Metaphysics

S. V. Murthy

Physics deals with matter in its various forms and also energy. The study of the finer points beyond the ordinary, i.e., the higher reaches of Physics, leads to metaphysics. Examples are the study of the symmetry in nature in crystallography, the physics of the limit of matter, the limit of velocity etc.

Broadly speaking, Physics is the science of natural laws. Nature reveals itself through its various laws and the Physicist makes new laws or theories to incorporate the physical phenomena. This is one of the methods of the growth of science. Among the theories, the simplest is always chosen for, as it is said, Nature is pleased with simplicity. A theory is a working thought model of the universe based on rationality and then experiments may be done to justify. This is another method of the growth of science. A good theory is the hallmark of physics thought and working. For example, the universe is said to have started with a big bang and is now said to have attained a steady state.

Many developments of this century border on metaphysics only. Physics is characterised by accurate measurements of all its quantities. Bringing the limit of accuracy of experimentation to the next decimal point is always hailed as a big achievement. But the famous Uncertainty Principle of Heisenberg sets a limit to the accuracy attainable in physics experimentation. This approximation is inevitable in the very process of measurement due to the interaction of the observer and the observed. In the measurement of angular momentum and velocity, the accuracy is limited by the relation,

$$\Delta p . \ \Delta q +$$

where $h = h/2\pi$ and h is the Planck's constant. Similarly, measurements of time and energy are limited by the relation

$$\Delta E . \quad \Delta t \sim h$$

Another aspects is the duality of matter and waves. Particle aspect and wave aspect of matter are complementary. Matter sometimes behaves as a particle and sometimes as a wave and the relation between them is,

$$\lambda = \frac{h,}{m \ v,}$$

where λ is the wavelength of the matter wave, m is the mass of the praticle and v its velocity.

It was proved by Relativity Theory that matter and energy are interconvertible,

$$E = m \ c^2,$$

where E is the Energy, m is the mass and c the velocity of light. But this relation, though general, does not answer when matter gets converted into energy. According to Democrites of Greece, the Atom was the indivisible particle. But this century showed that the atom consists of a nucleus round which there are electrons hovering. The nucleus itself consists of protons and neutrons, quarks and mesons etc. The natural philosophical question arises—, "Where is the limit to this endless divisibility of matter." According to the present-day theory, there are smaller particles than the quarks, the Femtons (10^{-15}cm.), Attons (10^{-18}cm.) and Besons (10^{-20}cm.). The Beson is the limit of matter. Smaller than Besons, matter diffuses into energy. The converse process is also ture. Energy accumulates into matter from Beson upwards.

Another interesting aspect is that the limit of velocity is set by the velocity of light. But now particles moving faster than light called, "Tachyons" are posulated. The Tachyons have surprising properties—their mass and energy decrease to zero as their velocity approaches infinity !

In classical thermodynamics, there is the tantalising problem of the perpetual motion machine. It has been ruled that such a machine is impossible.

Thus we have outlined how the developments in this century in the frontiers of physics have all bordered on metaphysics. In this race for development, a word of caution is necessary. New discoveries and inventions in science must not harm humanity, like the experiments on the mutation of the genes. The flare for doing something new must be moderated by this consideration. As Einstein has said, "When you write your diagrams and equations, try to look beyond what there is in black and white." ☐

CONVOCATION

Planned Growth of Education

Today universities the world over are passing through a crisis. They have to answer public questioning about their goals, priorities and functioning, and face a severe financial crunch. While the role of universities in training cadres for diverse fields, advancement of knowledge, and creating a cultural awareness is recognised, and even given increasing importance, it is argued that the university system has become too large and flabby, and the academics are either too smug and self-satisfied, or do not work hard enough to justify their salaries or are little concerned with the problems of the common man or the community. Some people think that the universities as constituted at present are out of data : they can no longer contribute significantly to research and that much of what they teach is out of date. Unable to answer these criticisms, most recent books in the West on high education take a gloomy view of the future of universities.

As is so often the case, many of our "thinkers" repeat the criticism of the university system in the West, and apply it to our universities mechanically. As compared to the West, our universities are hardly developed, and have a poor infrastructure for high level teaching and research. In fact, they have hardly broken out of the colonial mould which tried to make our universities mere purveyors of knowledge generated by our Imperialist masters. Hence, there was no emphasis on research or critical thinking in our universities. It is this problem of underdevelopment which we have yet to tackle. For the fulfilment of our national goals and objectives, we need a planned and systematic strengthening of education at all levels. This must include higher education, since higher education not only trains teachers for the other sectors but also plays a crucial role in national development. In fact, development of higher education is an index of national development and this is even more true in an underdeveloped country such as ours. Hence, to counterpose higher education to primary or adult education would be as wrong and harmful as counter-posing industrial growth to agricultural development or to counterpose light industry to heavy industry. Both have their role to play and neither can be neglected.

The University Grants Commission recently tried to take stock of the situation in the field of education, and put forward a strategy for change and development of education during the next 10 years. In its document "*Development of Higher Education — A Policy Frame*", it underlined the need for a drastic over-haul of the system and emphasised three aspects: "a transformation of its character through the introduction of a modern scientific outlook and other essential measures to suit our national needs and aspirations ; a substantial improvement of standards; and an extension of its coverage so that the education of the people becomes...a central object." At the University stage the document laid emphasis on regulating access to higher education, raising standards of education and research, restucturing of the syllabi, and diversification and decentralisation.

Despite many problems and difficulties, there has been substantial progress in these fields during the Fifth Plan. During the period 1974-79, i.e. the period originally indicated as the Fifth Plan period, the average growth rate of students enrolment has come down to 3.5% the compound rate being 2.5% as against the earlier growth of 12 to 14%. Simultaneously, enrolment in private study and correspondence courses specially at the undergraduate level has registered a very substantial increase. According to information received from 72 universities, at the B.A. and B.Com. levels, private students and correspondence course students form about 40% of the total. The decline in the rate of growth of students enrolment is, of course, not good in itself. But it provides us an opportunity for utilising scarce resources not for setting up new colleges to cope with the new students enrolment but for improving standards in the existing institutions. It is unfortunate that in a few states while the growth rate of students enrolment has been minus or near zero, many new colleges have been opened, despite the fact that in these states about 50% of their existing colleges are non-viable, i.e. they have poor enrolment and poor facilities. It is sometimes imagined that the opening of new Universities and Colleges depends on the UGC. As everyone knows, education being essentially a state subject, it is for State Governments to heed the advice given by the UGC in national interests and for the maintenance of standards. All that UGC can do if state governments do not heed the advice of the UGC is not to give central grants to institutions set up in violation of UGC guidelines. Generally speaking, UGC does not give grants to non-viable colleges set up after 1972 if they do not fulfil all the conditions of affiliation. I am happy to say that many states have been responsive to the thinking of the UGC. However, new pressures are building up in many states. It is necessary that Central and State Governments resist the unacademic demand for yet more colleges without a survey of facilities at the district level, which do not even promote social justice but *leads to lowering of standards.*

The guidelines issued by the UGC have helped in bringing down the rate of establishment of new colleges from two per week in the earlier Plans to two per month in the Fifth Plan. The UGC is not opposed to the establishment of new colleges to cater to the needs of Scheduled Tribes and Scheduled Castes and has, in fact, liberalised its condition, for grant to colleges catering to scheduled castes/scheduled tribes students.

Growth of science enrolment in study and research is an index to the growth of a country and its potential. Understandably there has been a great deal of concern about the declining trend in science enrolment in recent years. However, I am glad to say that during the Fifth Plan period, this trend has been arrested and reversed. The UGC has been able to play some little role in this welcome development by proving grants on a generous scale for laboratories, workshops and scientific equipment to undergraduate colleges. However, the negative trend may reappear if cuts in higher education led a reduced allocation for science teaching and research in universities and colleges. Of course, growth of industry and agriculture, and suitable opening for scientists, is the most important factor. A closer co-ordination between higher education and man-power planning is therefore necessary.

Teachers are the vital basis for improvement of standards. The U.G.C. allocated 24% of its funds in the Fifth Plan for faculty positions in universities so as to develop new branches of knowledge and to strengthen the existing ones. As a result, in the universities, teacher-pupil ratio as well as the proportion of senior faculty positions have improved. However, I would like to underline that though the Commission agreed to fund the new faculty positions till 1981, i.e. two years after the Plan would have been over, many State Universities have not received the approval of the State governments for all the faculty positions even now. This is a major reason why State Universities lag behind the Central Universities and the disparities between the two continue to grow. One of the projects of the Commission during the Sixth Plan was to raise about 20 selected State Universities to the level of developed universities by providing them development fund where necessary, on the same basis as Central Universities. The commission has not given up this project but it has had to modify it drastically in view of the present attenuated fund position in the central sector. In view of this, the share of the states would have to be increased and the scale of assistance to the developing universities would be less than visualised earlier. However, since Government has decided to recast the draft of Sixth Plan, I hope that the position will be rectified so that a cut in funds for higher education in the name of social justice does not lead to the development of further disparities within the system, and a set back to national development.

It is obvious that no improvement of academic standards would be possible without close co-operation between the Central and State Governments and the U.G.C. A national system of education cannot develop if state governments adopt policies which go counter to nationally accepted policies. In some cases, State Governments have modified existing policies without consulting the universities in the State or even against the advice of the U.G.C. As a result, encroachment on the autonomy of the universities has assumed serious proportions in some states. This needs a national debate and reconsideration. It would appear that the decision of some state governments to assume the responsibility, directly or indirectly, of appointing or promoting university teachers has hardly led to the induction of teachers of a higher calibre, nor made the selections truly national. On the other hand, it has led to great delays and the attendant evil of ad hoc appointments on a large scale. Proposals in some States to provide for the transfer of university teachers would, if implemented, create the danger of harrassment of good teachers, growth of groupism in the staff and entry of state politics into the day to day running of the universities. Nor can universities function if, instead of supporting and strengthening the position of the Vice-Chancellor, legislative steps are taken to make him even more dependent on government or on changing political winds in the State. Although education is on the concurrent list, no steps have so far been taken by the Central Government to study the problems of higher education in an integrated manner. A new initiative in the matter appears to be urgently necessary. The U.G.C. would, of course, be happy to co-operate with government in the matter.

I strongly feel that in order to get full public co-operation in strengthening the universities, the universities will have to take urgent steps to put their houses in order. I would like to mention some of the urgent tasks which, I feel, should be tackled immediately.

(i) There is no satisfactory machinery of planning in the universities. The Vice-Chancellors, unfortunately, are too busy with day-to-day administration, or with fire-fighting operations. Agitations, gheraos etc., consume most of the their time. As a result planning is done by fits and start. Moreover the university, community i.e. teachers and students are hardly involved in the Planning process. The University should set up Planning Board which may be headed by Pro-Vice-Chancellor or Dean of Planning. While the Board should report to the Vice-Chancellor, its main function should be to prepare a perspective plan for 10 to 15 years. This should indicate the optimum number of students at various levels, academic targets, expansion programmes etc. These could then be broken down into Plan targets and annual Plans.

(ii) There is little attempt at continuous monitoring of programmes and schemes. As a results, programmes are pushed to the last year of a Plan which often leads to infructuous or wasteful expenditure Let me give you an example. A well developed university in the Western zone, which had a plan grant of Rs 40 lakhs for books and equipment, spent on an average less than Rs 3 lakhs per year in the first four years of the Plan leaving Rs 28 lakhs to be spent in the last year. Since many universities had spent their funds the same way, the U.G.C. could not meet the demands, thus increasing the spill-over of the Sixth Plan and reducing the money it would have given to the universities otherwise.

(iii) The functoin of Registrar's offices needs considerable improvement. The Registrar's offices have become bottlenecks in many cases. They are neither able to efficiently serve the academic community nor provide timely information. Schemes and programmes of the U.G.C. are often not communicated to the academic community in time nor is information asked for by the U.G.C provided in time. Things can no doubt be improved by adopting modern methods of management, with provision for delegation of authority to appropriate levels and flexibility in functioning. The U.G.C. has asked a few Institutes of Management, and the National Administrative Staff College, Hyderabad, to study the university system from this point of view. I wonder whether Calcutta where some of the most prestigious Institutes of Management are located could take a lead in this matter. It could also help in restructuring the university system as a whole.

(iv) Information has been called the key to development in modern society. Unfortunately, little efforts have been made by universities to keep the wider community both within the university and outside, informed of their achievements and failings. At present, mainly negative reports about student indiscipline, damage to public property, mass copying, walk out of examinations etc., are reported in the press. These represent serious issues and problems which have to be tackled in an appropriate manner. However, the positive aspects are generally ignored or given poor coverage. Why is that so? I put this to a gathering of pressmen in a recent seminar at Delhi convened to mark the 200th Anniversary of the Press in India. While admitting their shortcomings in the matter, the pressmen put a counter question: what efforts have the universities or U.G.C. made to communicate regularly with the press? Their querry, in my opinion, is to some extent justified. Traditionally, academics have shunned the glare of publicity. That is not wrong and I would not like teachers to rush to the press for every small thing. However, it is for the administrators in the universities viz,, the Vice-Chancellor, Registrar etc., where necessary with the help of an Information Officer or Public Relations Officer, to keep the press and the community continuously informed of the positive developments that have taken place in the university and also to share their problems.

Universities can justify themselves only if they continually innovate, assimilate and disseminate new knowledge, and add to it. Calcutta University has been the leader of many academic ideas and reforms in the past. It has a long and proud academic tradition and has produced many figures of international fame. But a university cannot live in the past: it must continually renew itself and challenge existing ideas and institutions, and work on new frontiers. Calcutta University has a galaxy of able and talented scholars and researchers. It is for the university authorities to create appropriate conditions so that these scholars and researchers show the best results.

Though quantitatively research has grown in our universities in a big way after Independence, and especially during the Fifth Plan, and research in universities is cost effective, the climate of research has not yet fully developed in many of the universities. In many cases, short-sighted and out-moded bureaucratic methods seriously cramp research, and cause avoidable frustration. While 25% of university research is now of an R & D nature, there is still too much research that is repetitive or not relevant to our needs. Even developed universities have hardly used the introduction of 10+2+3 scheme to revise and update syllabi. The syllabi recently circulated by the U.G.C. have yet to be taken serious note of by Vice-Chancellors and by Boards of Studies in Universities. That is where the concept of autonomy within the universities viz, autonomy to faculties and to selected affiliated colleges, becomes important.

These are some of the problems facing us today. I am confident by closer association between the various agencies—the U.G.C., the Association of Indian Universities, Universities and Government both Central and State, we can, if not resolve, improve the situation in many respects, raise standards and create a sense of pride in the Indian University system.

(Excerpts from the Convocation address delivered by Prof. Satish Chandra, Chairman, University Grants Commission, at the Calcutta University recently.)

CAMPUS NEWS

Vice-Chancellors' Meeting at Cochin

The meeting of the Southern Indian Universities Vice-Chancellors held on the 25th February, 1980, at Bolghatty Palace Cochin, endorsed the resolution of the Association of Indian Universities in toto that the examinations of one University should be recognised by another University on a reciprocal basis provided that the entrance qualification, duration of courses and general standard of attainment are similar to those prescribed by the recognising Universities. The meeting also endorsed the resolution of the Inter University Consultative Committee, Kerala, that the degrees. diplomas and certificates awarded by one University in the state be recognised on a reciprocal basis by other Universities, provided that the entrance qualification, duration of courses and the general standard of attainment are similar to those prescribed by the recognising Universities.

Shri T.R. Jayaraman, Bangalore University, Prof. Jafar Nizam; Kakatiya University, Dr K.S. Hegde, Mysore University Shri P. Sivalingam, Perarignar Anna University of Technology, Dr M. Santhappa, Sri Venkateswara University, Shri B.S. Somasundaram, Annamalai University, Dr M. Shanmugha Rao, Jawaharlal Nehru Technological University, Dr V.K. Sukumaran Nair, Kerala University, Prof. K.A. Jaleel, Calicut University, Dr M.V. Pylee, Cochin University—(Vice-Chancellors), Dr K.I. Vasu , Pro-Vice-Chancellor, Cochin University, Shri P.V. George, Hyderabad University and Shri D. Muralikrishna, Nagarjuna University (Registrars) participated in the meeting.

In respect of the insistance and issuance of Migration Certificates, the Vice-Chancellors recommended that the status quo be maintained.

The meeting considered the suggestion of the Vice-Chancellor, Sri Venketeswara University; regarding deletion of Chemistry from the Syllabus of the Medical Students of that University. It was agreed that at the plus two stage the existing syllabus be upgraded on a par with the NCERT in physical sciences. Until this is done, the University, should make special arrangements for teaching and conducting examinations in Physics and Chemistry. There should be uniformity at least in the Universities in the state and general uniformity in all other Southern Universities.

The meeting considered the note circulated by the Vice-Chancellor, Kakatiya University, in respect of relaxation of qualification prescribed for the post of Lecturers in view of non-availability of qualified candidates in certain subjects and recommended that the Universities concerned may refer the matter to the U.G.C. and respective State Governments.

The meeting resolved that the Universities may examine the feasibility of introducing the subject "Defence Studies" at an appropriate level.

It was resolved that the Universities would consider the affiliation of colleges for starting post-graduate courses on a selective basis provided that the Library and Laboratory facilities and staff are assured in advance. The Universities should have control over admission of students and recruitment of staff.

NCERT prepares population education scheme

The National Council of Edu-National Research and Training (NCERT) is shortly launching a national population education programme. Population education would be woven into subjects like science, economics, geography and languages. Educational administrators and teachers would be trained for the job and special materials would be prepared.

Dr S.K. Mitra said the thrust of NCERT activities had recently undergone a change to suit the times, they were now aimed at helping the states in implementing the universalisation of elementary education programmes, inculcating right attitudes towards women and introducing health and nutrition education besides population education.

He said vocationalisation of post-secondary education was yet another reform that was under way. He said Tamil Nadu, West Bengal, Maharashtra, Karnataka and Delhi had introduced vocational programmes, but Delhi had not made much headway in this respect as young people preferred white-collar jobs there.

West Bengal, too, had run into difficulties with its programmes because of lack of advance preparations.

Computer-aided unit to assess UPSC exam papers

The Union Public Service Commission (UPSC) will be receiving in the next two weeks from the UK two sets of "Optical Mark Readers" as a gift from the British Council, representing a computer-assisted system which can read, score and record marks at a speed of 4,000 sheets per hour, by scanning sheets of paper on which the examinees make markings.

Prof. S. Sampath, Member, UPSC, said that the optical mark readers, made by a UK firm, Data Recognition System of London and gifted by the British Council, would have cost about Rs 3 lakhs. The markers have photo-electric sensors for purposes of scanning.

Explaining the need for such equipment, he said the number of candidates appearing for the UPSC examinations, particularly for the Indian Administrative Service (IAS) had increased to more than one lakh. This had obliged the UPSC to hold an entrance examination to "screen" the candidates before they could write the main examination. The very large number of candidates appearing for the examination had made it extremely difficult for the UPSC to rely on conventional methods of correction of the answer papers and recording the marks.

The kind of questions that the candidates to the entrance examination will face will be in the nature of "objective tests." They will be required to mark in a separate sheet the choice of answers they had given.

The markings made by the Optical Mark Readers will be responses to 200-multiple-choice questions on the single sheet. The markers have the processing capacity to identify the candidate by his roll-number and score his answer-sheet and put together all the scores obtained by him in several tests and record the aggregate total.

Prof. Sampath said that the British Council had deputed its experts to participate in a workshop on examination reform held recently in Delhi. He hoped that the other major agencies conducting examinations for recruitment such as the State Public Service Commissions, would also find the portable optical mark readers useful.

Elitist research in Punjab Agricultural University

The Punjab Agricultural University has turned its attention to various elitists research projects which will open immense possibilities in horticulture, forestry and even in the fields of rice and wheat through scientific manipulation of plant species.

The catalyst agent in this regard is the 3-year old tissue culture department of the university which is doing creditable work for sexual propagation and cloning of plants in test tubes. Though the work is still at the experimental stage, but ultimately the results will be applied in the fields. It holds out the promise of high-yielding hybrids and disease resistant strains to farmers and horticulturists. The demonstration stall put up by the tissue culture unit at the recent kisan mela opened by the university had been very popular.

While cloning in human beings and animals has raised ethical, social and religious questions, such genetic manipulation for rapid made-to-order multiplication of plant posed no such problem and it has already become a multi-million dollar industry in the United States and Europe. Dr. Y.P.S. Bajaj, Head of the Department said that the sexual incompatibility, artificial insemination and caesarian operation of plants have proved that such techniques can produce more and better results. By tissue culture new plants which do not exist in nature can be produced and thousands of disease-free identical daughter plants can be obtained from a single mother tissue in a short time. Although initiated half a century ago, the potential of this technique for agricultural research and crop improvement has been realised only recently. Today this science has advanced to a stage where it is possible to obtain an entire plant from almost every part of the mother plant, i.e. from small segments of roots, stems, leaves, buds, flowers, embroys, pollen, isolated cell and even from proplasts or naked cells. The rate of propagation is very fast. For example, to get an orchid flower from a seed, it takes about five years. By tissue culture the period is reduced to less than a year.

Nearly 200 plant species have been grown by this method. In Poland the carnation is a very popular flower and disease-free plants, obtained from stem tips, are available throughout the year. In California alone, there are 25 nurseries which raise more than one lakh cultures per month and produce plants worth $10 million which are sold within the United States. In addition to flowers entire popular trees have been obtained from cells at the Institute of Paper Chemistry in California and the Canada department of Agriculture produces disease-free potatoes from stem-tip cultures. In India, no serious effort has been made so far for the commercial exploitation of tissue culture.

According to Dr. Bajaj, at times difficulties arise when the parents are sexually incompatible. The barrier is overcome in test tube fertilisation involving direct injection of pollen into the young flower. This corresponds to artificial insemination in animals. Another technique is the culture of immature embryos in which the baby is removed at a premature stage and incubated under controlled conditions. Thus new hybrid plants, which ordinarily do not exist in nature, can be produced. For example, triticale, a man-made hybrid produced by crossing wheat with eye, has been produced at the university's experimental farms. This hybrid combines high yield and good quality of wheat with disease-resistance and high protein content of rye. Three varieties of triticale have been produced which are as high-yielding as the best wheat varieties. It has proved to be good feed for poultry and other livestock and excellent for biscuit-making. Experts are confident of releasing the seed of this hybrid for field trials in two or three years.

FAO Chief addresses PAU Convocation

The Director-General of UN Food and Agriculture Organisation Dr. Edouard Saouma said in Ludhiana that the reshaping of policies of agricultural universities in the Third World could go a long way in serving the rural poor. Such a direction would be in keeping with Mahatma Gandhi's tradition of seeking out the lost, the lowest and the least.

Dr. Saouma was addressing a special convocation held by the

Punjab Agricultural University. The University awarded Dr. Saouma an honorary doctorate.

Referring to Asia's food problem he said that the agricultural universities could play a big role in solving this problem. What should probably engage increasingly the attention of our agricultural universities are the subtle but very real non-technological barriers to a production breakthrough. He appreciated the role of PAU in boosting the Indian food production over the past few years. He said that the question today is whether the agricultural universities can move deliberately into a policy of serving, not merely the fittest but helping the weakest. The life of an Asian farmer was extremely complex. Besides there were sharp differences in the perception of decision-markers or educators and villagers. This difference persisted because many of the faculties and students rarely had the opportunity of looking beyond the needs of their model farmers. This was aggravated when faculy members tend to teach and do research on what is fashionable internationally. He emphasised that our academic practices should not produce small elites alien to the people they are supposed to serve.

Farmers Committee for PAU

Dr. Amrik Singh Cheema, Vice-Chancellor, Punjab Agricultural University, has constituted a farmers' committee which will focus the farmers problems to the notice of the various authorities of the university and assess them in seeking solutions. The Vice-Chancellor himself will be the Chairman of the committee. The Director of Extension, PAU will be the convener. The other members are mostly the farmers from the various agricultural districts in the State.

Dr. Cheema has emphasised the need for the use of solar energy to the maximum capacity. Earlier, the farmers had urged the university to undertake intensive research in the field of solar energy. Dr. Cheema has assured that the research activities on the use of the solar energy would be intensified.

Honours for 14 Agricultural scientists

Fourteen agricultural scientists were awarded the Jawaharlal Nehru awards by Mr. R.V. Swaminathan, Minister of State of Agriculture in New Delhi. The awards for outstanding postgraduate research in agriculture have been given by the Indian Council of Agricultural Research for 1979. The recipients of the Jawaharlal Nehru awards are : Dr. Baljit Singh Ghuman, Dr K.P. Joy, Dr. P. Sen, Dr. Hari Shankar and Dr. Manjit Singh Mahal.

The Hari Ashram Trust award for agricultural research went to Dr S. Jayaraj.

Dr J.N. Pandey, Dr. Man Mohan Nath Razdan, Dr. C.M. Singh and Mr S.C. Modgal received the *Kheti* Puraskar for 1978-79.

Guinnes Award for scientific achievement in the service of community was given to Dr. Dev Raj Bhumbla, Dr. Jai Singh Pal Yadav, Dr. Inder Pal Abrol and Dr. Karan Singh Dargan.

UGC concern at increase in "non-viable" Colleges

The University Grants Commission has advised state governments to convert some of their even viable colleges into rural polytechnics and also conduct surveys to evolve a policy regarding location of future colleges.

A viable college, according to the University Grants Commission, is one having an enrolment of 400 students or more after excluding pre-university/pre-professional and intermediate enrolments. In States having two-year degree courses in arts, commerce and science, the college must have 270 students to be deemed viable.

Against 1,396 non-viable colleges in 1973-74 there were 1,433 such colleges in 1977-78. The existence of such a large number of non-viable colleges, many of which are located in the rural areas, not only act as a drag on standards but has serious social implications. Standards in these institutions are low because they have not been provided proper facilities by the State governments before granting them recognition and because they are unable to find good teachers. Consequently the students who pass out from these institutions feel handicapped and suffer from a sense of insecurity. The analysis show that the States where the number of non-viable colleges has gone up by 50 per cent are Andhra Pradesh, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Punjab, Assam, Bihar, Manipur, Meghalaya, Nagaland and Orissa.

Another matter of serious concern to the University Grants Commission is the proliferation of postgraduate colleges. Of 612 postgraduate arts, science and commerce colleges, Maharashtra, Uttar Pradesh and Madhya Pradesh accounted for 365 or 60 per cent. Seven States comprising these three and Tamil Nadu, Kerala, Rajasthan and Punjab account for 543 or 89 per cent of the growth in numbers. According to the University Grants Commission the education standards cannot be maintained if such a large number of PG colleges are sought to be established by some of the state governments in addition to a large number of universities. The Commission would prefer postgraduate courses being taught in universities rather than in separately created colleges. Another vexing problem is strain on old universities because of the inadequacies in the new ones. This strain manifests itself most glaringly in the disparity between various universities in the number of students directly on the rolls in the teaching departments. Only six universities —Lucknow, M.S. University of Baroda, Banaras, Calcutta and Aligarh—had an enrolment of more than 10,000 students (undergraduate, postgraduate, law, professional courses combined) being taught directly by university teaching departments. The highest number was 19,012 in Lucknow University, including 5,860 law students and the lowest was Bhopal University which had an enrolment of only 57 students.

Jiwaji University was somewhat better off with 113 students on the rolls. Quite clearly a balance has to be achieved in the growth of the smaller and newer universities vis-a-vis the old and trusted ones. New universities set up to cater to regional needs entail a much higher per capita expenditure both plan and non plan as compared to many developed universities. The growth in numbers in higher education is evident from a survey of the increase in the number of institutions and enrolment. In 1961-62 there were only 49 universities and 1,783 colleges with 6,63,661 students. In 1977-78, there were 105 universities, 10 institutions deemed to be universities, 4,610 colleges and a whopping students on the rolls. In the sixties, university-level enrolment increased by about 12 to 15 per cent per annum. It dropped to nine per cent in 1970-71 to 5.9 per cent in 1974-75 to 2.5 per cent in 1975-76 and to 0.2 per cent in 1976-77.

Academy of Oriental Studies for Sri Venkateswara University

The University Grants Commission has not agreed to the proposal of the State Government for the establishment of a Sanskrit University in Andhra Pradesh. Mr N.S. Reddy, Director of Higher Education, had urged the Government to reconsider the desirability of starting academy of oriental studies to function under Sri Venkateswara University with the support of Tirumala Tirupati Devasathanam. The Education Minister and the Director of Higher Education have also suggested that all the oriental colleges and music colleges might be affiliated to the proposed university.

UGC Text Books

The University Grants Commission is preparing 450 university level books, most of them on science, engineering and technology to provide quality books for universities and colleges. Manuscripts of 127 books have already been completed and 24 of them have been published. These books are being written by teachers and research scholars of institutions of higher learning in the country with financial assistance from the Commission. Among the various subjects, engineering and technology account for the maximum number i.e. 54 out of which manuscript for 22 have already been completed. Bio-Physics ranks next with 12 completed manuscripts and 25 under preparation, mathematics and statistics come third with 10 and 17 respectively. For languages, literature and linguistics manuscripts have been completed while 43 projects are under implementation.

UGC Programmes under review

According to newspaper reports, the University Grants Commission is considering a proposal to revise the amount of fellowships granted to research scholars with a view to attracting bright students. A comprehensive review of the various programmes is also under way. Committees are being set up for the four zones. They would be visiting the universities as part of the review exercise. They would also go to the colleges. The review exercise showed the need to monitor funding critically. While the UGC should define its priorities, the universities must outline theirs. make allocations and monitor the impact of projects. The thrust of the programmes are on raising some university departments to the level of Centre of Advanced Study on account of the quality of world work performed, enabling some departments to receive special assistance giving departmental support for some others. The UGC is also concerned with the quality of Ph. D.s turned out by the universities due to great variations in the number of doctorates coming out from universities.

Bhatia's Plan for better training of Journalists

A two-pronged approach to improve training in journalism was suggested by the Editor-in-Chief of the Tribune, Mr Prem Bhatia in the course of the first Prof. P.P. Singh Memorial Lecture delivered at the Maharshi Dayanand University, Rohtak. Mr Bhatia said that it was essential that admission to the existing courses of journalism of the universities should become much more selective so that wastage is reduced to the minimum. Secondly, newspapers and news agencies for their part should become more cooperative in providing practical training to students from approved institutions.

While the present standards of journalism education were far from satisfactory, it was wrong to think that academic training in journalism received at the university stage is a waste. Judging from the extensive ignorance among the present generation of journalists, especially those working at the news desk, the journalists of the future could do with more knowledge of the world and with a broader base of information. Among the most common failings in the journalists today was ignorance of history and geography. They also had little or no knowledge of the law of the land with the result that they involved their newspapers or news agencies in avoidable cases of donation and contempt of court. Preparatory education at the university stage could remove these deficiencies to a large extent provided there were properly qualified teachers and wisely planned curricula.

Mr Bhatia mentioned the outline of a scheme which, in his opinion, could meet the requirements of academic education and practical training in journalism. He suggested the setting up of three or four institutions of training with the active participation of newspapers themselves. Each of the newspaper concerned would take a limited number of apprentices every year keeping in view their own future requirements and the requirements of the profession as a whole. He said that the persons in command of the profession should realise that they have a responsibility to the profession apart from the need to promote opportunities for proper training to their own interests. Such institutions of training should have a separate section for apprenticeship in Indian language apprenticeship. Newspaper chains such as those owned by the Jain, Birla and Goenka groups which have publications in more than one language could more easily implement this scheme than newspapers which publish only in one language.

Four Agricultural Scientists Honoured

The four Indian scientists who have been awarded the Commonwealth Guinness Award for scientific Achievement have been associated with the Central Soil Salinity Research Institute of CSIR for a long time. The four scientists are Dr. D.R. Bhumbla, founder Director of C.S.S.R.I., Dr. J.S.P. Yadav, its present Director, Dr. I.P. Abrol, Head of the Division of Soils and Agronomy and Dr. K.S. Dargan, Senior Agronomist.

Dr Bhumbla was born on December 6, 1921, in Malewal village in Hoshiarpur district. After he had worked in various capacities in the Punjab Agricultural Department and Punjab Agricultural University, Ludhiana, Dr Bhumbla was appointed founder Director of the Central Soil Salinity Research Institute. He played an inportant role in laying out the research farm and in building the institute.

Dr Bhumbla became Deputy Director-General (Soils Agronomy and Engineering) of the I.C.A.R. where he worked till August, 1978.

He is a joint winner of the Rafi Ahmed Kidwai Award 1972-73 for his work on salt-affected soils. He has over 100 publications to his credit. At present Dr Bhumbla is Vice-President of the International Society of Soil Sciences.

Dr Jai Singh Pal Yadav was born on July 30, 1922, in Akhepur village in Aligarh district. He served U.P. Government from 1947 to 1956 in various capacities. For over a decade he worked at the Forest Research Institute, Dehra Dun. Later he joined the staff of the C.S.S.R.I.

Dr Yadav took over as Director of the C.S.S.R.I. in 1974. Under his guidance the institute has made great strides in finding solutions to the problem of soil salinity and alkalinity. He has published over 130 papers. He is a recipient of the Schlich and Brandish Memorial Awards and the Australian Cultural Award.

Dr I.P. Abrol, has worked on various aspects of reclamation and management of alkaline soils. He was awarded the Rafi Ahmed Kidwai Award for 1972-73.

He was a member of the expert team sent by the Government of India to Iraq to advise on salinity problems. He is the Vice-Chairman of the Soil Technology Commission of the International Society of Soil Science. He has published over 100 papers and is the author of four technical bulletins published by the institute.

Dr K.S. Dargan was born on February 10, 1921, in Dargan village in Montgomery district (now in Pakistan). He graduated from Khalsa College, Amritsar, and did his M. Sc. from Panjab University and was awarded the Ph.D, degree by the University of Calcutta.

AN AGRONOMIST

He worked on the agronomic problems of the cotton and oilseed crops at Sirsa. He is responsible for introducing the jute-paddy-wheat rotation system in West Bengal. Since 1970 Dr Dargan has been working on reclamation and crop production in salt-affected soils. His work is concerned with the optimum management requirements of crops grown in alkaline soils. He has published nearly 100 papers.

Calicut earmarks 40 lakhs for new departments

Mr. P.V. Shankaranrayan, Chairman of the Finance Committee of the University of Calicut while presenting the budget before the Senate of the University expressed the hope that the Government while fixing the non-plan grant to the university would take into account the additional expenditure of Rs 1.5 lakhs provided for new posts and pay revision and other financial commitments. The university has made a provision of Rs 40 lakhs for starting new departments and for strengthening existing departments with equipments, additional staff and books and journals. The university anticipates during the year a grant of Rs 137.9 lakhs from the State Government including 35 lakhs on plan account. There is a provision for the construction of two hostels, one for men and the other for women and for providing better water supply in the campus. A sum of Rs 25.40 lakhs has also been earmarked for fellowship grants, maintenance of hostels and other miscellaneous expenditure. A special allocation of Rs 37 lakhs has been made for a zoological experiment garden, marine biological laboratory and research journals under the zoology department of the university.

The draft Sixth Plan proposals which were also placed before the Senate envisage an expenditure of Rs 3.5 crores for various development programmes. The major thrust however would be on the development of the existing staff besides starting new departments like Anthropology, Archaeology Museology, Computer Science, Continuing Education and Correspondence Education, Wood Science and West Asian Studies.

Social Scientists urged to direct developmental activities

Prof. G. Ram Reddy, Vice-Chancellor, Osmania University said in Hyderabad that the social scientists should help the policy formulators and decision makers in identifying reasons for the low development of the country and suggest new approaches to increase the tempo of development. He was releasing English, Telugu and Social Science Publications of the department of political Science and Public Administration of Osmania and Kakatiya Universities. Prof Reddy said that the findings of social science research should be made available in the form of books at a low cost. Mr M.R. Pai, Commissioner of Institute of Administration, who presided over the function, said that further research on the implementation aspect of the socio-economic has to be done. Prof. Zafar Nizam, Vice-Chancellor of Kakatiya University, stressed the need for the development of inter-university collaboration in such research projects.

Many new courses at Madurai University

Dr V.Sp. Manickam, Vice-Chancellor of Madurai Kamaraj University said that the Syndicate of the university has decided to introduce MEd course in the Institute of Correspondence and Continuing Education from the academic year 1980-81. The Academic Council had earlier approved the starting of the following new courses from the next year : BA in Muthamizh and a diploma course in musicology. A new optional subject 'human relations' has been introduced for M. Com. course. The Council also approved a proposal to introduce industry-oriented courses of the ancillary level in the undergraduate degree courses. The courses have been introduced based on the industrial needs and potentialities of the industries in various towns under the jurisdiction of the university. They will begin from the second year of the degree cours i.e. from 1981-82. For certain university examinations after getting necessary exemptions, blind candidates will be permitted to appear privately. Postgraduate students can improve their internal assessment marks and external marks by reappearing for the examinations in the papers concerned. Teacher candidates with B. Com. degree may appear privately for M. Com. under certain conditions. School teachers who have completed their SSLC may appear for B. Lit. degree in Tamil after private study.

58-lakh deficit in Bombay University Budget

The Budget Estimates of Bombay University for the year 1980-81 were presented at the annual meeting of the Senate held in Bombay recently. An income of Rs. 753 lakhs as against an estimated expenditure of Rs. 811.25 lakhs shows a deficit of Rs. 58.25 lakhs in the proposal. The development programme launched as part of the fifth plan schemes, as proposed to be completed in a budget of Rs. 172.36 lakhs. Schemes of the U.D.C.T. plans for teaching and research and the development of management education are expected to be completed with finances from this budget.

Among the welfare programmes proposed is the most innovative scheme which envisages the provision of loans to university employees for the purpose of cooperative housing. A sum of Rs. 10 lakhs has been provided for this purpose.

Rs. 25 lakhs has been set aside as development funds, Rs. 10 lakhs for efficient conduct of examinations and Rs. 5 lakhs for the construction of a new administrative building in the Kalina campus.

New Vocational University in the offing

A new university, the first of its kind in the country, to impart job-oriented-cum-technical education for youth is being established in Maharashtra. It is expected to cost Rs seven crores and a large number of educationists, philanthropists and political leaders have assured their cooperation in setting up this institution.

Some philanthropic institutions in Sweden, Norway, Denmark, West Germany, the Netherlands, France, the UK, Canada, Japan and oil-rich Arab countries have also expressed their desire to assist the project. It is expected that Rs 6 crores in the form of donations at the initial stage will be made available from these countries and the United Nations.

The proposed university will impart basic technical knowledge at a nominal charge. A student after getting employment or starting his factory will be required to repay for 15 years a sum of Rs 150 to Rs 200 a year when he starts earning Rs 20 or more a day. This will enable the university to have a constant income over the year. Basic training will be phased in such a manner that the institute will turn out about 3000 workmen every year capable of taking up skilled or semi-skilled industrial units of their own.

Cytogenetics seminar held in Patna

A three-day All-India seminar on recent methodological approaches in cytogenetics was recently held in Patna under the auspices of the University Department of Botany. About 100 eminent scientists from all over the country participated in the deliberations of the seminar.

The seminar discussed the current trends in basic and applied cytogenetics in the light of recent sophisticated instrumentation in cytogenetical investigations and recommended measures to upgrade the teachings of cytogenetics in the university.

Evaluation procedures of theses to be reviewed

The Calcutta University authorities have constituted a 16-member committee for streamlining the present regulations with regard to the examination of theses for Ph.D., D.Sc. and D. Litt. The first meeting of the committee was held recently in Calcutta under the chairmanship of Dr R.K. Poddar, Vice-Chancellor of the University. He said that the idea was to publish the results promptly for the benefit of the candidates. Dr Poddar said that after a thorough review the committee might draw up fresh regulations mainly to avoid delay in publication of results. He suggested that theses submitted by candidates should pass through an initial process of screening.

Darbhanga to publish 5000 Sanskrit manuscripts

The K.S. Darbhanga Sanskrit University has drawn up a plan to publish 5,000 rare manuscripts on ancient learning including some original works of the great poet Vidyapati. Dr Mahendra Thakur, Registrar of the university said that the publications of the manuscripts would cost about Rs 25 crores and it is proposed to bring out these publications in a phased manner. About half a dozen manuscripts had already been published and an equal number was under print. Dr Thakur said that the Raj Darbhanga had alone donated about 4000 manuscripts and some of them dated back to 1000 A.D.

Varsity staff demand parity in pay scales

The Tamil Nadu University Employees' Federation has demanded identical pay scales for ministerial staff of different universities in the State, representation in the governing bodies, housing facilities and employment opportunities in the universities for their wards. The Federation adopted a ten-point charter of demands at its meeting held in Madras recently. Representatives of non-teaching staff of the four universities in the State participated in the meeting. It was recommended that the disparity in the pay scales of the staff should go immediately. It also urged the Government to give more loans to the staff to enable them to construct the houses. The federation wanted the active participation of its members in the Senate, Syndicate or Managing Boards of the universities since they were directly engaged in the administration of developmental projects and canalisation of funds.

It also suggested that the vacancies in the posts of Registrar and Finance Officer should be filled by staff from within the university and the practice of bringing personnel from the Government should not be continued further The meeting wanted the Government to extend educational fee concession to the wards of university employees and grant them leave travel concession.

Bangalore proposes incentives for staff

The Bangalore University will introduce special incentive schemes for the teaching as well as the non-teaching staff of the university from the academic year 1980-81. The scheme is meant to remove the stagnation in the pay scales of the teaching and the non-teaching staff and create better promotional avenues. The scheme also includes the institution of fellowships to the university teachers to encourage them to take up research work. A sum of Rs. 2 lakhs has been provided under the incentive scheme in the financial estimates of the university for 1980-81. Allocation of Rs. 10 lakhs for a special scheme for SC/ST students, a sum of Rs. 8 lakhs for the pension scheme started by the university for its teaching and non-teaching staff, Rs. 9 lakhs for the annual maintenance and Rs. 10 lakhs for the special repairs for the city campus are some of the other highlights of the financial estimates. The total estimated expenditure of the university is about Rs. 560 lakhs as against the anticipated receipts of Rs. 561.99 lakhs.

A Master's degree in sericulture will be introduced in the university from the academic year 1980-81. Mr. K. B. Munivenkata Reddy, Member of the Syndicate and the Finance Committee, while placing the financial estimates for 1980-81 stated that the State Government had granted Rs. 50 lakhs to the university for research and development of sericulture. The finances granted under the assistance of the World Bank would be spread over a period of five years. The university had decided to earmark Rs. 5 lakhs for this allocation for starting the postgraduate course in sericulture.

Special attention to colleges in backward areas

The Andhra Pradesh Education Minister, Mr. B. Venkatram Reddy, has announced that the State Government will soon prepare master plan for establishing colleges in economically and academically backward areas. The State Government was also giving serious thought to the question of introducing reforms in the existing examination system. To gather expert opinion on this question, a seminar was being organised in Hyderabad. Eminent educationists from different parts of the country will participate in the seminar. Teachers' representatives and others would also be invited. The Government would take a policy decision on the implementation of this reform from the next academic year.

The Government is also considering the question of appointing a committee to revise text books. The vocational education has already been introduced at the intermediate level and the response so far has been very encouraging.

Personal

1. Prof. A.K. Banerji, Head of the Department of Journalism and Mass Communication of the Banaras Hindu University, has been elected President of the second Indian Journalism Congress in the seventh annual session of the Indian Journalism Education Association. Prof. L.N. Gohale of Poona University has been elected General Secretary of the Association.

2. Dr. T.M. Ameer Ahamed, Associate Professor in Civil Engineering of the Engineering College of Bangalore University has been awarded a Certificate of Merit and a cash prize by the Institution of Public Health Engineers, India.

3. Dr. P.S. Gill, former Director of the C.S.I.O., Chandigarh and an eminent physicist has become the first Indian to be elected a member, to be designated as Fellow, of the Prestigious Explorers' Club of New York.

4. Mr. Jagannath Kaushal and Mrs. Gurbinder Kaur, both MPs, have been nominated members of the Institute Body of the Postgraduate Institute of Medical Education and Research, Chandigarh. They replace Dr. Sushila Nayar and Mr. Bhagat Ram.

5. Mr. Liu Xi Geng, Vice-Minister for Agriculture of China visited the Punjab Agricultural University, Ludhiana recently. He said that the exchange of scientists and cooperation in the field of food production between China and India might materialise soon. He expressed the hope that friendship between his country and India would grow further.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Operational Research

1. Goel, Vijay Prakash. Studies in general inventory models. University of Delhi.

Mathematics

1. Ajay Kumar. Spectral synthesis in hypergroups. University of Delhi.

2. Bagchi, Kalyan Kumar. On some dynamical problems in continuum mechanics. University of Calcutta.

3. Bhatia, Rita. Representation theory of special linear algebra SI (2,c) and generating functions involving Appell's functions. I.I.T., Delhi.

4. Bose, S.C. Some fixed point theorems of nonlinear mappings in branch spaces. I.I.T., Delhi.

5. Chourasia, Nilima Nirmalchandra. On essential spectra, Weyl's theorem and quasi-similarity of Branch space operators. Sardar Patel University.

6. Joshi, P.S. A study of the causality principle in general relativity. Bhavnagar University.

7. Kabadi, Suputra Appasab. Some problems in non-Newtonian flows with or without heat transfer. Karnatak University.

8. Manohar Lal. A new metric in the study of error—correcting codes. University of Delhi.

9. Moral Nalini Kumar. Incompressible second and third order fluids. Dibrugarh University.

10. Mukhopadhyay, Alpana. On some structures of integral transform theories. University of Calcutta.

11. Randhir Singh. Study of incomplete information in sample surveys. University of Delhi.

12. Vasudeva Rao, Yerikalapudy. On some problems in wave motion in elastic solids. Andhra University.

Physics

1. Abha. Infrared absorption study of transition metal cyanides doped in alkali halide crystals. University of Delhi.

2. Ashok Kumar. Perturbed angular correlation studies in the decay of 207Bi, 127m+g Te and 129m+g Te. University of Delhi.

3. Bagchi, Bijan Kumar. Hadron interactions and their symmetries. University of Calcutta.

4. Baghel, Ramnarayan. Study of lattice dynamics of hexagonal close-packed metals based on electron fluid model. I.I.T., Delhi.

5. Bhanwar Singh. Photo-induced chemical and electrochemical changes in amorphous Se-Ge films. I.I.T., Delhi.

6. Bhatnagar, Pramod Kumar. Study of photovoltaic effect in metal-oxide-semiconductor solar cells. University of Delhi.

7. Borikar, Shankar Mahadeorao. Some aspects of relativistic thermodynamics. Nagpur University.

8. Chakrabarty, Subrata. Quark-pair-creation model for strong and radiative couplings of qq and cc measons. University of Delhi.

9. Chakravarty, Bidhan Chandra. Diffusion of Ga in Si through SiO_2. University of Delhi.

10. De, Dilip Kumar. Studies on paramagnetic properties of Crystalline solids of 3rd transition metal group by EPR and allied techniques. University of Calcutta.

11. Ghosh, Jayati. A study of nucleus-nucleus interactions in the Glauber theory of multiple scattering. University of Delhi.

12. Mathes, Rajan. Experimental investigations on beta decay and nuclear structure. Andhra University.

13. Nangia, Om Prakash. Impurity incorporation in bulk silicon crystals. University of Delhi.

14. Radhey Shyam. Study of conductivity, magnetoresistance and switching in bulk amorphous chalcogenide semiconductors. University of Delhi.

15. Sunil Kumar. Interaction of resonant radiation field with two level atoms. I.I.T., Delhi.

16. Usha Devi. Multiphoton processes in diatomic molecules in an intense laser beam. University of Delhi.

Chemistry

1. Bandyopadhyay, Syamal. Calorimetric studies on some metal complexes. University of Calcutta.

2. Chetia, Padma. A kinetic study on interaction of polymer radicals with metal ions. Dibrugarh University.

3. Das, Michael. Synthetic investigations in search for newer tryponocides. University of Calcutta.

4. Gupta, Gopal. Preparation and characterization of bis (cyclopentadienyl) zirconium (IV) derivatives with O, N or S containing ligands. University of Delhi.

5. Kar, Susantakumar. Studies in the transition metal complexes of substituted heterocyclic bases. University of Calcutta.

6. Mahendra Pal. Studies on the reactions of Al (III) Ti (IV) and Zr (IV) is opropoxides chlorides with hydroxy esters, hydroxy carboxylic hydroxamic acids. University of Delhi.

7. Mrutyunjayrao, Ivaturi. Physico-chemical investigations of lanthanide (2-pyridylazo)-2-naphthol (PAN) complexes. Andhra University.

8. Negi, Rajendra Kumar. Studies on the isolation and characterisation of some metal complexes of O-dihydroxycoumarins. University of Delhi.

9. Padhi, Kumudini. Studies of heterocyclic compounds. University of Calcutta.

10. Pandaya, Prem Lata. Fluorescent reagents. Jiwaji University.

11. Ralhan, S.M. Goat carboxypeptidase A: Purification and characterisation of various forms of Carboxypeptidase A. I.I.T., Delhi.

12. Raychaudhuri, Tapankumar. Studies in coordination chemistry of molybdenum. University of Calcutta.

13. Sengupta, Sambhunath. Studies on organic and biochemical reactions with inorganic reagents. University of Calcutta.

14. Sharma, Lokesh Kumar. Kinetics and mechanism of the degradation of adenosine triphosphate. University of Delhi.

15. Singh, Raj Bhushan, Investigations on some new hydrazones as analytical reagents. University of Delhi.

16. Siva Kumar Reddy, Damavarapu. Chemical constituents of Macranga peltata Muell and Bauhinia racemosa Lamk. Andhra University.

17. Soni, Purshottam. Coordination chemistry of some organometallic compounds of titanium (IV), zirconium (IV) and hafnium (IV). University of Delhi.

18. Srivastava, A.K. Studies on the kinetics and mechanism of organic solid state reactions. I.S.M., Dhanbad.

19. Suthar, Bhikhabhai Punjabhai. New organic polymers. Sardar Patel University.

20. Venkata Ramana, Pepakayala. Analytical applications of some azine dyes. Andhra University.

Earth Sciences

1. Gowd Reddy, K. Hydrogeological and geochemical investigations of Hirechalla drainage basin in Koppal and Yelburga Taluka of Raichur District, Karnataka, India. Karnatak University.

2. Misra, Rabi Narayan. Structure, stratigraphy and mineralisation of a part of Sandur Basin. Utkal University.

Engineering & Technology

1. Ayyadurai, M. Analysis and design of rotor control of wound-rotor induction motor. I.I.T., Delhi.

2. Jindal, Subodh. Current gain variability and physical modelling of normal and I^2 L bipolar transistors. I.I.T., Delhi.

3. Subramanian, R.K. Towards performance evaluation and improvement of paged virtual memory systems. I.I.T., Delhi.

BIOLOGICAL SCIENCES

Anthropology

1. Sen, Amiya Kumar. Background of human evolution: A study in Indian context. University of Calcutta.

Marine Biology

1. Antony, A. Studies on the foraminifera of the South West Coast of India. University of Cochin.

2. George, K.C. Studies on the distribution and abundance of fish eggs and larvae off the South West Coast of India with special reference to scombroids. University of Cochin.

Biochemistry

1. Baral, Bani. Studies on serological properties and blood group determinant mucopolysaccharides of plant seed extract. University of Calcutta.

2. Deb, Anil Chandra. Studies on serum aldolase in health and in some diseases. University of Calcutta.

3. Kale, Raosaheb Kathalupant. Chemical protection against ionizing radiation by 2-mercaptopropionylglycine. Jawaharlal Nehru University.

Botany

1. Bhattacharyya, Bani. Genetic variants in lipoprotein patterns with reference to normal and abnormal mammalian systems. University of Calcutta.

2. Chakraborti, Sankardas. Allelopathy in Clerodendrum viscosum Vent: Inhibition of mustard germination and seedling growth. University of Calcutta.

3. Datta, Swapan Kumar. Pharmacognosy of important laticiferous bark drugs. University of Calcutta.

4. Deka, Makhani. Studies on the growth of excised root tissues by the application of both organic and inorganic compounds. Gauhati University.

5. Malkani, Neelam Pari. Ecological studies on the weed Chenopodium album Linn. University of Delhi.

6. Paria, Nandadulai. A survey of the leguminosae with respect to sleep movement. University of Calcutta.

7. Ray, Barun Kumar. Isolation and characterization of growth substances from plant extracts and their role in the improvement of plants of economic importance. University of Calcutta.

8. Sandhyavathy Bai, L. Studies on the metabolism of glycosaminoglycans in relation to atherosclerosis: Role of sex Hormones. University of Kerala.

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1. Ghosh, Sanat Kumar. Taxonomy of Neuroptera (Insecta) in Eastern India. University of Calcutta.

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5. Sanyal, Pranati. Effect of sodium malonate on ovarian steroidogenesis in Magur fish, Clarious sp. University of Calcutta.

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3. Pal, Prajnamita. Electrocardiographic and allied studies on normal children before and after exercise test. University of Calcutta.

4. Pakrasi, Pranablal. Effect of the extract of the root of Aristolochia indica (Linn.) on fertility, spermatogenesis and other related studies. University of Calcutta.

5. Ravindranath Kartha, V.N. Interrelationship between hepatotoxins and vitamin E and other antioxidants in erythrocyte metabolism in human and experimental animals. University of Kerala.

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1. De, Rabindranath. Genetical studies in Oryza sativa L. University of Calcutta.

2. Dharam Singh. Studies on the effectiveness of sodium chloride as desiccant and defoliant under varying nitrogen levels of the growth, yield and quality parameters of American cotton varieties, G. hirsutum L. under irrigated conditions. Haryana Agricultural University.

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Applications on the prescribed form (8 copies) available from the office of the Registrar on payment of Rs. 5/- for the post of Professor/Reader and Rs. 2/- for the post of Lecturer as registration fee in cash or by postal order drawn in favour of the Registrar, University of Gorakhpur by name, are invited so as to reach this office through the employer, if employed, not later than 21-4-1980 for the following posts in the faculties of Arts, Science, Commerce and Education :—

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C.	Reader in Mil. Science	One post	(Permanent)
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C.	Reader in Economics	One post	(Permanent)
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E.	Lecturer in Commerce	Three posts	(1 permanent & 2 Temporary)

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C.	Reader in Geography	One post	(Permanent)
D.	Reader in Psychology	One post	(Temporary)

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Eminent scholarship with published work of high quality and active engagement in research and ten years experience of teaching or research and experience of guiding research at doctorate level.

OR

Outstanding scholarship with established reputation for significant contribution to knowledge.

2. **Reader:**

(a) Good academic record with a doctorate degree or equivalent published work, and active engagement in research or innovation in teaching methods, or production of teaching materials; and

(b) Five years experience of teaching or research including at least three years as Lecturer or in an equivalent position.

Provided that the requirement contained in clause (b) may be relaxed in the case of a candidate who, in the opinion of the Selection Committee, has outstanding research work to his credit.

3. **Lecturer:**

(Except in the case of Fine Arts in the Faculty of Arts)

(a) A doctorate degree or research work of an equally high standard in a relevant subject; and

(b) Consistently good academic record with first or high Second Class Master's degree, or an equivalent degree of a foreign University in a relevant subject.

In the case of Fine Arts the qualifications for the post of Lecturer shall be as follows:

(a) Consistently good academic record with first or high second class Master's degree, or an equivalent degree or diploma recognised by the University in a relevant subject and

(b) Two years research or professional experience or creative work and achievement in his field of specialisation or a combined research and professional experience of three years in the field as an artist of outstanding talent.

OR

A traditional or a professional artist with high commendable professional achievement in the subject concerned.

Qualifications for the Posts in the Faculty of Education:

1. **Lecturer:**

(a) A doctorate degree in Education or research work of an equally high standard; and

(b) Consistently good academic record with first or high second class Master's degree or anequivalent degree of a foreign University in a relevant subject;

OR

(a) A doctorate degree in any University discipline or research work of an equally-high standard; and

(b) Consistently good academic record with an M. Phil. degree in Education (which may be acquired while in service) or an equivalent degree of a foreign University.

GENERAL:

1. If the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications for the post of Lecturer prescribed in clause (b) as the case may be in the Faculties of Arts, Science and Commerce where in the cases of the faculties of Arts, Science, Commerce and Education no candidate possessing doctorate degree or equivalent research work is available or is considered suitable, a person

possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of qualify) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory or organisation, on the condition that he obtains a doctorate or gives evidence of research work of equivalent high standard within five years of his appointment, failing which he shall not be able to earn future increments until he fulfils the requirements.

2. Marks above the mid-point between the minimum percentage of marks fixed by the University for award of first and second divisions are said to be high second class marks;

3. A candidate for lecturership in the *Faculty of Education having* obtained either an average of 55 per cent marks in the two examinations prior to Master's degree, that is to say Intermediate and Bachelor's degree examinations, as also in the examination for B. Ed. (irrespective of the marks obtained in any of the three examinations), or 50 per cent marks in each of the three examinations separately, *is said to have a consistently* good academic record.

4. A candidate (other than a candidate for lecturership in the faculties of Education and Law) having obtained either an average of 55 per cent marks in the two examinations prior to Master's degree that is to say Intermediate and Bachelor's degree examinations (irrespective of the marks obtained in any of the two examinations), or 50 per cent marks in each of the two examinations separately, is said to have a consistently good academic record.

The candidates will be required to appear for the interview, if called, at their own expenses. The Selection Committee may recommend higher initial salary to a person specially qualified for the above posts. It will be open to University not to fill up any post advertised. Convassing in any form by or on behalf of the candidate will disqualify him.

Note:

The number of posts can increase or decrease.

2. The applications received in response to previous advertisements the above mentioned posts stands cancelled. Persons who have already applied need to apply a fresh.

REGISTRAR

SHREEMATI NATHIBAI DAMODAR THACKERSEY WOMEN'S UNIVERSITY

BOMBAY-400020

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1. HEAD OF THE DEPARTMENTS

(i) Clinical Pathology & Microbiology

Qualifications: (a) M.D. Pathology or M.B.B.S. with Diploma in Pathology and Bacteriology (b) Teaching and administrative experience of about 2 years.

(ii) Food Technology

Qualifications (a) First or Second Class Master's Degree in the subject concerned. *(b) Either a Research Degree* of the Doctorate standard or an outstanding competence assessed from the review of published research carried out during the said period. (c) Teaching and administrative experience of about 7 years in an institution offering applied courses like those of Polytechnic.

Conditions at (b) and (c) above relaxable in case persons with stipulated *qualifications are not available or not* considered suitable for the post.

Salary Scale: Rs. 1000-50-1500+ admissible allowances (Total initial emoluments about Rs. 1500/- per month)

For post No. (i) in addition to salary percentage of heading commercial laboratory negotiable.

2. **Lecturer in Food Technology**

Qualifications: At least II Class M.Sc. Tech. with Food Technology as special subject.

Salary scale: Rs. 680-40-1000-50-1250+admissible allowances (Total initial emoluments about Rs. 1100/- p.m.)

3. **Lecturer in English**

4. **Lecturer in Commerce**

Qualifications: At least II Class Master's Degree in relevant subjects with some teaching experience.

Salary scale: Rs. 600-30-750-40-950+ admissible allawances (Total initial emoluments about Rs. 1100/- per month)

5. **Instructor in Weaving, Dyeing & Printing**

Qualifications: At least II Class Graduate with Diploma in Textile Designing from a recognised institute.

Salary scale: Rs. 500-20-700-25-900+ admissible allowances (Total initial emoluments about Rs 800/- per month).

6. **Instructor in Shorthand & Typing**

Qualifications: At least II Class Graduate with G.C.C. Certificate in Shorthand & Typing with two year's experience.

Salary scale: Rs. 500-20-700-25-900+ admissible allowances (Total initial emoluments about Rs 800/- per month).

7. **Catalogue Assistant**

Qualifications: II Class Graduate (preferably in Science) and Diploma or Degree in Library Science with some experience.

Salary Scale: Rs. 290-10-390-15-465-EB-15-540+admissible allowances. (Total initial emoluments about Rs. 500 per month)

Note: (a) Only suitable candidates will be called for interview (b) Other thing being equal preference will be given to candidates from Scheduled Castes/Scheduled Tribes/ Other Backward Communities (c) Higher starting salary may be considered in exceptional cases (d) Job specifications for posts under (i) be collected with application forms.

(Smt.) Kamalini H. Bhansali
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

Notification No. 11

Applications are invited for the following posts in prescribed forms which will be available upto **1st May, 1980** alongwith the details of qualifications and Specialization from the undersigned on pre-payment of Rs 2-00 (Re. 00-50 np. for members of Scheduled Castes/Scheduled Tribes) by Crossed Indian Postal Order payable to Registrar, M.S. University of Baroda *alongwith a self-addressed envelope of* 30 cms x 12 cms for each post.

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FACULTY OF ARTS: **Lecturer in**:

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FACULTY OF COMMERCE: **Lecturer in**:

(9) Accounts (10) Banking (11) Business Administration (12) Business Economics (3 posts) (13) Commerce (2 posts) *(14) Co-operation (15) English* (2 posts) (16) Statistics.

FACULTY OF EDUCATION AND PSYCHOLOGY: **Lecturer in**:

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FACULTY OF FINE ARTS: **Lecturer in**:

(19) Art History (20) Museology.

COLLEGE OF INDIAN MUSIC, *DANCE AND DRAMATICS*: Lecturer in: (21) Tabla (22) Violin.

FACULTY OF HOME SCIENCE: **Lecturer in**:

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FACULTY OF SCIENCE: **Lecturer in**:

(26) Bio-chemistry (2 posts) (27) Lecturer in Nutrition (28) Botany (3 posts) (29) Chemistry (5 posts) (30) Microbiology (31) Statistics (2 posts) (31a) Mathematics.

BARODA SANSKRIT MAHAVIDYALAYA:

(32) Pradhyapakas (in Different Shastras) (6 posts) (33) Pradhyapaka in English.

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M.K. AMIN ARTS AND SCIENCE COLLEGE AND COLLEGE OF COMMERCE, PADRA Lecturer in:

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S. No. 1(1), 2(1), 3(1), 8(1), 11(1), 12(1), 15(1), 16(1), 17(1), 22(1), 23(1), 24(1), 25(1), 26(1), 28(1), 29(3), 30(1), 32(1), 35(1), 37(1).
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S. No. 2(1), 3(1), 12(1), 17(1), 24(1), 25(1), 28(1), 29(1), 31(1), 32(1), 37a(1).

If no suitable candidates are available from SC/ST/SEBC Categories, the posts will be filled up by other candidates who are found suitable.

The application form, duly completed, be sent to the Registrar, M.S. University of Baroda, Baroda-2 along with the Crossed Indian Postal Order for Rs. 8-00 (Rs. 2-00 for SC/ST candidate) payable to the Registrar, M.S. University of Baroda, Baroda on or before **10th May, 1980**.

The candidates if called for interview will have to come **at their own expenses.**

K.A. Amin
REGISTRAR

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. MOHANPUR, WEST BENGAL

Advertisement No. Apptt./3/80

Applications are invited in prescribed forms for the following posts in the scales mentioned below plus other allowances as admissible under the rules of the Viswa Vidyalaya:—

KALYANI CAMPUS

A. Reader in Agronomy (Two posts)
B. Lecturer in Agril. Engineering/ Genetics & Plants Breeding (one post each)

NORTH BENGAL CAMPUS

C. Reader in Plant Pathology/Ag. Entomology/Ag. Engineering (one post each)
D. Lecturer in Agronomy/Genetics & Plant Breeding/Agril. Engineering one post each).

RESEARCH POSTS FOR REGIONAL RESEARCH STATION AT COOCH BEHAR

E. Officer in-charge/Associate Director of Research.
F. Associate Research Scientists (Agronomy, Horticulture, Soil, Plant Breeding, Plant Pathology, Agril. Entomology, Soil Conservation)
G. Assistant Research Scientists (Agronomy, Horticulture, Soil,

(*Contd. on page 220*)

Indian school of Mines

Dhanbad-826004

No. 615135 Dated : March 21, 1980

Admission to Postgraduate Engineering Programmes 1980-81

1. Applications are invited from candidates possessing requisite qualifications as indicated below for admission to the following postgraduate ENGINEERING programmes being offered at the Indian School of Mines, which is deemed to be University under the UGC Act :

No	Programme	Department	Eligibility Oualifications.
E-I	CISM/DISM/M Tech in Industrial Engg and Management (Oriented towards mineral industries-see Note A).	Industrial Engineering and Management	Degree (or equiv) in Engg with at least six months industrial training
E-II	One-year DISM in Drilling Engg. (see Note B)	Engineering and Mining Machinery	Degree (or equiv) in Mech/Min/ Aut/Prod Engg or Min Machinery.
E-III	One-year DISM Mining Machinery	Engineering and Mining Machinery	Degree (or equiv) in Min Mach/ Mech/Elec/Electronics/Min Engg.
E-IV	One-year DISM in Mineral Engg	Chemistry, Fuel and Metallurgy	Degree (or equiv) in Chem/Min/ Mech/Met/Elec Engg or MSc in Ore Dressing/Appl Geology
E-V	One-year DISM in Fuel Engg	Chemistry, Fuel and Metallurgy	A degree in Fuel/ Chem/Min/Met/ Mech/Elec Engg. or Equivalent.
E-VI	One-year DISM in Min Engg. (Specialisations offered: Mine Planning & Design, Rock Mechanics, Environment).	Mining Engineering	Degree (or equiv) in Min Engg
E-VI (PT)	Two-year part-time DISM Programme in Mining Engg (Evening classes)	Mining Engineering	Degree (or equiv) in Min Engg

E-VII Two-year M Tech (Opencast Mining)	Mining Engineering	Degree (or equiv.) in Min Engg or Civil/Elec/Mech/Engg or MSc in App Geology (with one year experience in Opencast Mines in case of non-mining candidates
E IV-M One year M Tech (Minl Engg)	Chem, Fuel & Met	DISM in Mineral Engg.
E-V M One-year M Tech (Fuel Engg)	-do-	DISM in Fuel Engg
E-III-M One year M Tech (Min Machinery)	Engg & Min Mach	DISM in Min Machinery
E-VI-M One-year M Tech (Mining Engg)	Min Engg	DISM in Min Engg

Note (A): Programme E-I/Consists of three terms of course work, each of 12-week duration. A student successfully completing one term is awarded the postgraduate Certificate of CISM. A student completing two terms, with additional guided project work of 4-month duration, is awarded the postgraduate Diploma of DISM, while a student completing all the three terms with guided research work for one year is awarded the M Tech degree in Industrial Engg and Management.

Note (B): Programme E-II also consists of three terms (each of 12 week duration), first two of course work and the third one for industrial training.

Note (C): For programmes E-III-M to E-VI-M, there is only guided project work. For candidates working as external candidates, the project shall normally be of two-year duration.

2.1 In each case a candidate should have obtained at least 60% marks in the qualifying examination—relaxable to 55% for SC/ST candidates, for sponsored candidates and for those with field/research experience or special aptitude for research.

2.2 Candidates shall have to appear at a written test (of about two-hour duration) and **viva-voce** at the SCHOOL on the dates intimated. No T.A. shall be paid for attending these tests.

2.3 Only 6-12 Candidates, may be admitted in each course depending on circumstances. 20% of the seats are reserved for SC/ST candidates, if available, Otherwise they will be thrown open.

3.1 Preference is given to **sponsored candidates**. (Sponsorship in this context means retention of lien on post and grant of suitable allowance). Application of sponsored candidates should carry suitable endorsement to this effect by the employer.

3.2 **Scholarships**: Unsponsored students are eligible for a scholarship of Rs 400 p.m. for a period not exceeding 12 months (upto 24 months for programmes E-I and E-VII) provided that they have obtained at least 60% or 55% marks, as the case may be, in the qualifying examination.

Students of Programmes E-VI (PT) are NOT eligible for any scholarship, as also external students of Programmes E-III-M to E-VI-M.

4.1 **Procedure for applying**: Application forms along with programme-particulars can be obtained by sending a Bank Draft or crossed Postal Order (where banking facilities are not available) for a sum of Rupees Five only, made payable to the Registrar, Indian School of Mines, Dhanbad-826004, along with a self-addressed unstamped envelope of size 23 cm × 10 cm.

4.2 Last Date for Receipt of Completed Application is May 20, '80.

S.P. VARMA
REGISTRAR

(*Contd. from page 219*)

Plant Breeding, Plant Pathology, Agril. Entomology, Agril. Economics)

H. Assistant Statistician (one post)

POSTS UNDER SCHEME

I. Research Scientist (one post under temporary scheme)

J. Field Officer (one post under Comprehensive Scheme: Cost of Cultivation).

Scale of pay for the post/posts at E: 1500-60-1800-100-2000-125/2-2500/-

A, C & F: Rs. 1200-50-1300-60-1900/-

B, D, G, H & I: Rs. 700-40-1100-50-1600/-

J: Rs. 400-40-800-50-950/- (unrevised-likely to be revised)

Qualification for the posts at 'A' & 'C':

(i) A first class or high second class Master's Degree in the subject or an equivalent qualification of a foreign University (ii) A Doctoral Degree in the relevant subject or published work with a good record of research (iii) Five years' experience of teaching and/or research, of which three years must be as Lecturer or in a post of equivalent rank.

Qualification for the posts at 'B' & 'D':

(i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent degree of a foreign University (ii) A Doctoral degree in the subject concerned or published research work of an equally high standard.

*For the post of Lecturer in Agril. Engineering, Kalyani Campus, Specialisation in Farm Machinery & Power in M. Tech. in Agricultural Engineering is required.

**Those who have applied for the post of Lecturer in Agril. Engineering, North Bengal Campus as per our advertisement No. APTT/3/79 need not apply, their cases will be considered.

Qualification for the post at 'E':

(i) A first or high second class Master's Degree in any branch of Agricultural Sciences (ii) A Doctorate Degree or equivalent published work with distinguished record of research of high standard (iii) Ten year's experience of teaching and/or research (iv) Experience of successfully guiding research at the Doctoral level.

OR

An eminent scholar with published work of high quality actively engaged in research (ii) Ten years' experience of teaching and/or research (iii) Experience of successfully guiding research at the Doctoral level.

Qualification for the post at 'F': A first or high second class 'Master's Degree in the subject or equivalent degree of a foreign University (ii) A Doctoral with Degree in the subject or published work a good record of research (iii) Five years' experience of teaching and/or research.

Qualification for the post at 'G':

(i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent degree of a foreign University (ii) A Doctoral Degree in the relevant subject or published work of an equally high standard.

Qualification for the post at 'H':

(i) A consistently good academic record with first or high second class Master's Degree in Statistics with knowledge of programming (ii) A Doctoral degree in the relevant subject or published work of an equally high standard.

Desirable:

Teaching/Research/Extension work *experience.*

Qualification for the post at 'I' :

(i) A consistently good academic record with first or high second class Master's Degree in Agril. Chem & Soil Science/Agril. Chemistry/ Soil Science with major field of specialisation in Soil Science or equivalent degree of a foreign University (ii) A Doctorate Degree in the concerned subject or published research work of an equally high standard.

Desirable:

Experience of research in the field of Chemistry of submerged soils.

N.B.:

(i) For the posts of Reader/Lecturer/ Asst. R.S./Assoc. Research Scientist in Agronomy & Horticulture, Master's Degree should be followed by B.Sc (Ag.) Degree.

(ii) For the posts under B, D, G, H & I, preference will be given to the candidates having basic degree in Agriculture i.e. B.Sc. (Ag.)

Qualification for the post at 'J':

A good Master's Degree in Agril. Economics following a degree in Agriculture

OR

A good Master's Degree in Agricultural Economics with a good honours degree in Economics.

Desirable:

Two years experience of research and/or service in connection with *Comprehensive data collection work in* the villages.

AGE:

For post at 'E':—Below 55 years.

'A', 'C' & 'F':—Below 50 years.

'B', 'D', 'G', 'H', 'I' & 'J': Below 45 years.

Experience and age limit may be relaxable on the recommendations of the Selection Committee in the case of candidates otherwise qualified. A high initial pay in the scale may be granted on the basis of qualifications, experiences and present emoluments.

Applications must be submitted in the prescribed forms obtainable from the Office of the Registrar, Bidhan Chandra Krishi Viswa Vidyalaya, P.O. Mohanpur, Dist. Nadia, West Bengal by remitting crossed Indian Postal Order for Rs 8.00 (eight) in favour of the Bidhan Chandra Krishi Viswa Vidyalaya between 11-30 A.M. & 4-00 P.M. on week days and between 11-30 A.M. & 1-00 P.M. on Saturdays.

Application forms may also be obtained by post by sending a self-addressed envelope stamped Re. 0.45 (forty five paise) only and the necessary **Postal Order.**

Persons already in employment should apply through proper channel.

Applications completed in all respects should be submitted to the Office of the undersigned by the **26th April, 1980** in an envelope superscribed with the name of the post applied for.

Candidates called for interview will have to appear at their own cost.

A.K. Mitra

REGISTRAR (Actg.)

Awadhesh Pratap Singh Vishwavidyalaya Rewa (M.P.)

Quotation Tender Notice

The library building of Awadhesh Pratap Singh University Rewa. M.P. has to be furnished with steel and wooden furniture the details of the rooms are given as follows. The interested person and supplier may visit the site and suggest the required furniture and quote their rates latest by **29th April 1980**. The details can be had from the University Engineer.

(1)	General reading hall	34.60 x 11.62 meter
(2)	Stack room	29.35 x 14.40 meter
(3)	Cubicals	2.20 x 2.90 meter
(4)	Text book room with stack provision	9.73 x 14.45 meter
(5)	Under graduate reading room	9.78 x 14.45 meter
(6)	Exhibition hall	14.68 x 17.58 meter

REGISTRAR

Engg/80/747/760 **Date 9-4-80**

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The Journal is mailed on 1st and 15th of every month.

TECHNICAL TEACHERS TRAINING INSTITUTE

(Southern Region) ADYAR MADRAS-600020

Advt. No. 1/80

Applications are invited in the prescribed form for the following posts:

POSTS & SCALES OF PAY	QUALIFICATIONS	EXPERIENCE
1. Professor of Educational Management & Administration (1 No.) Rs. 1500-60-1800-100-2000-125/2-2500. Age: 35 to 48 years.	First class Master's Degree/Ph.D. in Business Administration/Indl. Engg./Behavioural Science/related discipline.	Minimum of 7 to 10 years of distinguished experience in teaching/Research in an institution of Univ. standard at Post Graduate level or in a teachers' training institute; OR 15 years of teaching experience in a polytechnic or Engg college out of which at least 6 years must have been at the level of a Principal or Head of Department in a poly. or other equivalent cadres.
2. Asst Professor of Extension Centre (1 No. & one more likely to arise) Rs. 1200-50-1300-60-1900. Age: 30 to 45 years.	First Class Master's Degree/Doctorate in Engineering discipline.	Minimum of 5 yrs. experience in teaching/research in an institution of University standard or in a teachers' trg. institute OR 10 yrs. teaching experience in a polytechnic or Engg College out of which atleast 3 yrs. should have been at the level of Lecturer in a polytechnic or other equivalent cadres.
3. Asst Professor of Maths. (1 No.) Rs. 1200-50-1300-60-1900. Age: 30 to 45 years.	First class Master's Degree/Doctorate degree in Mathematics.	-Do-
4. Asst Professor of Educational Communication. (1 No.) Rs. 1200-50-1300-60-1900. Age: 30 to 45 years.	First class Master's Degree/Ph.D. in English.	-Do-
5. Lecturer in Mech Engineering. (1 No. and one more likely to arise) Rs. 700-40-1100-50-1600. Age: 25 to 35 years.	First class Master's Degree in Mech Engg.	2 yrs teaching/indl. research experience in an institution of Univ. standard (OR) 3 yrs teaching experience in a polytechnic or Engg College.
6. Lecturer in Electronics Engineering. (1 No.) Rs. 700-40-1100-50-1600. Age: 25 to 35 years.	First class Master's degree in Electronics engineering.	-Do-
7. Editor (1 No.) Rs. 700-40-900- EB- 40- 1100-50-1300. Age: 25 to 35 years.	Degree with a Diploma in journalism.	About 5 years experience in editing research reports/instructional material/annual reports/journals and other institute publications.

NOTE: Posts at Sl. Nos. 1 and 4 are being advertised for the second and third time respectively. For these posts, educational qualifications in lieu of longer period of experience and experience requirements in lieu of better educational qualifications are relaxable.

All posts carry usual allowances as applicable at present to the employees of the Central Government. Preference will be given to SC/ST candidates if they are otherwise qualified for all the posts. Age is relaxable in suitable cases. Those who are already in service may also be considered on 'Foreign service terms'.

The Institute reserves to itself the right to alter the number of posts, to fill or not to fill any or all the above posts, and to call or not to call the candidates for interview.

Application form together with 'instructions to candidates' and detailed qualifications, experience, job description etc. can be obtained from the Principal of the Institute on requisition with a self-addressed envelope (23 x 10 cm) duly affixing postage stamps to the value of 90 paise.

Applications duly completed in all respects should reach the principal on or before **15-5-1980**.

3rd April 1980.

PRINCIPAL

SAURASHTRA UNIVERSITY

Applications in the prescribed forms are invited for the under-mentioned posts. Application forms alongwith detailed requirements of qualifications and experience for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005 on sending a self-addressed envelope of the size 23x11 cms. with postage stamps worth Rs 1-20.

Applications (Seven copies) accompanied by Indian Postal Order for Rs. 10/- crossed in favour of the Registrar, Saurashtra University, Rajkot should reach this office on or before 12-5-1980.

1. DEPARTMENT OF GUJARATI
  Readers—2
  Preferably in Literary Criticism/ Linguistics.

2. DEPARTMENT OF ECONOMICS
  (a) Professor—1
  Specialization in Managerial Economics/Quantitative Economics/Mathematical Economics/Industrial Economics and/or allied subjects.
  (b) Reader—1
  Specialization in Rural Studies/ Quantitative Economics /Managerial Economics and/or allied subjects.

3. DEPARTMENT OF SOCIOLOGY
  (a) Professor—1
  The incumbent is required to develop Rural Sociology in Saurashtra.
  (b) Lecturer—1
  Expected to work for developing Rural Sociology and Regional Studies.

4. DEPARTMENT OF HISTORY
  (a) Reader—1
  (b) Lecturer—1

5. DEPARTMENT OF COMMERCE
  Reader—1
  Specialization in Quantitative Techniques or Applied Economics (Banking & Finance, Business Economics etc.)

6. DEPARTMENT OF BIO-SCIENCES
  Lecturer—1

Specialization in Ecology, Evolutionary Genetics, Biochemistry, Biophysics, Radiation Biology, Field research experience with reference to Dessertification will be an added qualification.

7. PROFESSOR-IN-CHARGE
  (English Language Cell)

Must possess qualification for being recognised as a P.G. Teacher. Expected to be incharge of English Language cell for improving the competence of teachers, students in the use of English as a Library Language.

PAY SCALES:

1. PROFESSOR: Rs. 1500-60-1800-100-2000-125/2-2500.
2. READER : Rs. 1200-50-1300-60-1600-assessment-60-1900.
3. LECTURER : Rs. 700-40-100-50-1300-assessment-50-1600.
4. PROFESSOR-IN-CHARGE: Rs. 1000/- fixed P.M.
   (English Language Cell)

The post Nos. 1 to 6 are permanent and the appointment shall be given on probation *initially* for one year which may be extended for a period not exceeding one year.

The post No. 7 is purely temporary and will continue upto 31-3-1981.

For the post Nos. 1 to 6 the initial *appointment shall* be with the minimum *of the pay scale* but in *suitable* cases higher *initial pay may* be *considered.* The allowances like D.A., A.D.A., H.R.A. etc. and Provident Fund and retirement benefits will be admissible as per the University Rules from time to time.

One post is reserved for Scheduled Castes, Scheduled Tribes, Nomadic Tribes/Denotified Tribes and Social and *Educational* Backward Class candidates *subject to the availability* of suitable candidates.

Age ordinarily not exceeding 55 years. The age, educational qualifications and the experience may be relaxed in suitable cases.

The employment shall be subject to the conditions of service rules for the University employees as may be amended from time to time.

The candidates already in employment must submit their applications through their present employers. Those knowing Gujarati and/or Hindi will be preferred.

The candidates will have to travel at their own cost if called for interview

B.F. Shah
I/c REGISTRAR

Indian school of Mines

DHANBAD-826004

No: *615126/79* **Dated: 14.3.1980**

Admission to Advanced Diploma in Mine Surveying 1980-81

Applications are invited from candidates possessing the requisite qualifications for admission to ONE-YEAR Advanced Diploma course in Mine Surveying being offered by the Indian School of Mines, which is a deemed to be a University under the University Grants Commission Act:

2. Eligibility Requirements:

(A) (i) Diploma in Mining/Surveying/Civil Engg (or equivalent) with one-year experience in underground coal/metal mine surveying.

(ii) The candidate should have obtained at least 60% marks in the qualifying examination, relaxable to 50% for sponsored candidates.

OR

(B) In case of sponsored candidates only, Higher Secondary (with Physics, Chemistry and Mathematics), with Mine Surveyors Certificate of Competency (granted under the Mines Act) and one year experience as Surveyor after obtaining the said Certificate (Persons who have completed the relevant Make-up semester at Indian School of Mines would also be eligible for admission).

3. Preference will be given to sponsored candidates and, amongst them, to persons holding a diploma as at 2(A) above. Sponsorship in this context means retention of lien on post and grant of suitable allowance. Application of sponsored candidate should carry suitable endorsement by the employer to this effect.

4. Procedure for applying:

Application forms alongwith the relevant information bulletin can be obtained by sending a Bank Draft or Crossed Postal Order, where banking facilities are not available for Rs. 5/- (Rupees Five only) made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

Last Date for Receipt of Completed Applications: May 31, 1980.

S. P. Varma
REGISTRAR

O/ISM/80

SHREEMATI NATHIBAI DAMODAR THACKERSEY WOMENS' UNIVERSITY

BOMBAY-400020

Applications are invited on prescribed forms (8 copies) available from the University Office on payment of Rs. 5/- (by M.O. or in cash) for the following posts to be filled in at the colleges conducted by the University at Bombay and Poona, so as to reach the undersigned before **April 24, 1980**.

	Medium	**No. of posts**
I. **S.N.D.T. Arts & Commerce College for Women, Bombay**		
LECTURER IN		
1. Commerce	English	One
2. Economics	(a) Gujarati	One
	(b) English	One
II. **S.N.D.T. Arts & Commerce College for Women, Poona**		
LECTURER IN		
1. Commerce	Marathi & English	One
2. Economics	Marathi & English)	Three
3. Hindi		One
4. English		One
III. **P.V.D.T. College of Education for Women, Bombay**		
LECTURER IN		
1. Education	Marathi	One
2. Special Education	English	One
3. Guidance & Counselling	Marathi Or Gujarati	One
IV. **S.N.D.T. College of Education for Women, Poona**		
Lecturer in Education	Marathi	One

Qualifications: (a) Consistently good academic record with at least first or high second class at Master's and Bachelor's level in the subject concerned or an equivalent degree of a foreign University; and

(b) An M. Phil. Degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Note:

(1) Provided that if the Selection Committee is of the view that the research work of a candidate is evident either from his/her thesis or from his/her published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

(2) Provided further that if a candidate possessing the qualifications at (b) above is not available or not considered suitable the college on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he/she will have to obtain a M. Phil Degree or a recognised degree beyond the Master's level within five years of his/her appointment, failing which he/she will not be able to earn future increment until he/she obtains that degree or gives evidence of equivalent published work of high standard.

Salary Scale:

Rs. 700-40-1100-50-1300-Assessment-50-1600+admissible allowances per month (Total initial emoluments about Rs. 1175/- per month).

Additional requirements for Lecturers in Education Colleges under III and IV

(a) **P.V.D.T. College of Education for Women, Bombay**

1. **Lecturer in Education**:

Post-Graduate Degree in: Mathematics and Statistics/ Statistics as a special paper/Group at Master's level:

or

B.Ed. with: (i) Mathematics and Science/Geography (ii) Science and Mathematics or Geography.

Experience in Micro-teaching and Adult Education.

2. **Lecturer in Special Education** :

Specialisation in Special Education or Education and Psychology or Education and Child Development are essential.

3. **Lecturers in Guidance & Counselling**:

Diploma in Vocational Guidance of Government of Maharashtra or its equivalent, and actual experience of guidance and counselling work are essential.

(b) **S.N.D.T. College of Education for Women, Poona**

Lecturer in Education:

Specialisation in Home Science or Gujarati or Commerce with Methodology of Teaching of the subject/subjects. Training in Micro-teaching/working with community work experience.

Note:

(a) Only suitable candidates will be called for interview

(b) Other things being equal, preference will be given to candidates from Scheduled Castes/Scheduled Tribes/Other Backward Communities

(c) Higher starting salary may be considered in exceptional cases

(d) Job specification for posts under III and IV be collected with application forms.

(Smt.) Kamalini H. Bhansali
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

NOTIFICATION No. 10

Applications in the prescribed forms are invited for the following posts in Computer Centre.

(1) Head, Computer Centre

(2) System Manager (Hardware)

(3) Programmers (Two posts)

Scale:

Rs. 1500-60-1800-100-2000 For post No. 1

Rs. 1100-50-1300-EB-60-1600 for post No. 2

Rs. 700-40-980-EB-40-1100-50-1200-EB-50-1300 for post No. 3

The posts carry usual allowances in accordance with the rules of the University.

Application form will be available on payment of Crossed I.P.O. of Rs. 2/- (Re. 00-50 for members of SC/ST) upto 22nd April, 1980 and the complete application with prescribed fee in form of Crossed I.P.O. of Rs. 10/- for post No. 1 and of Rs. 8/- for posts No. 2 and 3 (Rs. 2-50 and Rs 2-00 for members of SC/ST respectively) in favour of Registrar, M.S. University of Baroda, should reach this office on or before **20th April, 1980**. Those who want application forms by post may send a self addressed envelope of 30 x 12 cms.

K.A. Amin
REGISTRAR

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